BUREAU OF HYGIENE AND TROPICAL DISEASES.

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MALARIA.

FAUST (Ernest Carroll). **An Inquiry into the Prevalence of Malaria in China.**—*China Med. Jl.* 1926. Oct. Vol. 40. No. 10. pp. 937–956. With 3 maps and 1 chart. [18 refs.]

Ague as reported in China dates back to 2600 B.C. Answers from 150 medical men to a questionnaire show :—

" (1) The complete absence of the disease endemically in the northwest, outside of a line drawn through Kalgan, Central Shansi (north and south), Southern Shensi and Central Kansu (east and west) ; (2) the severity of the infection beginning in the lower Yangtze Valley and extending along the southeast coast, reaching its saturation point in Formosa, Hainan, and Tonkin (French Indo-China) ; (3) the heavy infection in southwestern Yünnan, particularly in the region adjacent to Burma ; (4) the heavy infection in the upper Yangtze Valley (Min River, Central Szechuan) ; (5) the relatively small amount of malaria in Manchuria, except for a focus of heavy infection in the Amur basin (Lahasusu and Taheiho) near the Maritime Provinces of Siberia ; (6) the relatively light infection in Seoul, as contrasted with severely endemic foci in Southern Korea : and (7) the singularly low incidence of malaria in Hunan Province, in spite of the fact that climatic factors and the topography of the country would seem to favour a heavy and widespread distribution of the disease throughout the province."

Blackwater fever has been reported from the southeast coast, from Hankow and Southern Yunnan. " Possibly the recent use of quinine therapy in China may be responsible for the absence of blackwater fever throughout the greater part of the country." A map, readable with a magnifying glass, shows the known anopheline distribution.

Clayton Lane.

i. BOREL (M.). Anophèles et paludisme dans la région de Chaudoc (Cochinchine). Résultats d'une enquête faite du 16 au 21 janvier 1926. [**Anopheles and Malaria in Cochin-China and Annam.**]—*Bull. Soc. Path. Exot.* 1926. Nov. 10. Vol. 19. No. 9. pp. 806–811.

ii. ——. Paludisme en Cochinchine. Résultats de mesures prophylactiques à la plantation de Suzannah (11 au 13 août 1926).—*Ibid.* pp. 811–815.

iii. ——. Résultats d'une enquête épidémiologique et entomologique à Yaback (Annam.).—*Ibid.* pp. 845–852.

i. & ii. Agricultural improvement has lessened anopheline breeding, and the only species captured was *A. vagus*, but *A. hyrcanus nigerrimus*

is held to be certainly present and larvae of *A. vagus* and *A. kochi* were found, while at Toy-Son live *A. barbriostris*, *A. hyrcanus* and *A. fuliginosus*.

Of 21 children examined at Suzannah, 4 showed *P. falciparum* and one *P. malariae*. *A. vagus* bred in cattle footprints, *A. kochi* in streamlet and puddles, *A. leucosphyrus* in shady pools and in tree holes, *A. barbirostris* in overgrown forest streams. In these cases antilarval measures are held to be more hopeful than others among people too poor or too careless to take quinine regularly, although both have contributed to success. In the first paper improved cultivation of pineapple, areca nut and coconut is advised.

iii. A plateau at an altitude of 850 m. (nearly 3,000 ft.) occupied by a coffee plantation with much malaria. Splenomegaly in children is invariable, but anaemia and parasites in the blood are not always in accord. The birth rate is low and infantile mortality high. No adult, but many larval anopheles were found (*A. maculatus*) and the percentage of species distribution was *P. falciparum* 51·7, *P. vivax* 20·68, *P. malariae* 27·6. And when as here the tiger carries off in a year 7 adults of a village population of 60, there is the more reason to include the plasmodium among those agents of death against which man's counter attack has to be launched.

C. L.

Koidzumi (Makoto). **On the Spread and Prevalence of Malaria in Formosa.**—*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 2. pp. 27–29.

There are 2 annual malarial outbreaks in Formosa, one with its height in August or September, but beginning perhaps as early as May, and the other with its height in November or December and beginning 2 months earlier. In some localities only one of these outbreaks occurs. In the paper only "tropical" malaria is mentioned. In answer to a question, tropical and tertian were stated to occur. Laboratory-hatched specimens of *A. minimus*, *A. pleccau*, *A. tesselatus*, *A. maculatus*, *A. hatorii*, *A. splendidus* and *A. fuliginosus* developed oocysts of tropical malaria. "The most powerful transmitter of tropical malaria seems to be *A. tesselatus*. This species, however, is not so rich in number and *A. maculatus* seems to be taken as the most important transmitter in the Island."

C. L.

Kobayashi (H.). **Malaria in Chosen.**—*Mitt. d. Med. Akad. zu Keijo.* 1926. Vol. 9. No. 3 & 4. 1 p.

Only *P. vivax* has been detected in Korea, although other clincial types, especially quartan, prevail. *A. sinensis* is everywhere common. *A. coreicus* has been found. In 5 named hospitals, the malaria cases have fallen from 2,322 in 1921 to 635 in 1924, a decrease attributed to Government efforts to improve hygiene and the administration of quinine.

C. L.

CHRISTOPHERS (S. R.) & SINTON (J. A.). **A Malaria Map of India.**—*Indian Jl. Med. Res.* 1926. July. Vol. 14. No. 1. pp. 173–178. With 1 folding map. [43 refs.]

This valuable coloured map has been compiled at the Malaria Bureau, Kasauli. The system of colouring is ingenious. Shades of red indicate an incidence which is markedly seasonal; this occurs in the sub-tropical, semi-desert parts and is characterized by an early summer malarial rise, a lull, and a marked autumnal rise following the south-west monsoon. Within this zone is another indicated in dark red, lying essentially in the submontane Punjab, which is swept by those appalling epidemic outbursts which have arisen about every eight years, and which give over an area extending even to 10,000 square miles a mortality of as much as 30 times the normal, with a spleen rate of 90 per cent. not returning to normal for 5 years. These outbreaks are focal, and largely dependent on diluvial conditions, resulting from abnormal rainfall too large for the rivers to remove. It is here that GILL's forecasts have permitted prompt measures of prevention, and where, it may be added, there has been no major epidemic since 1908.

Shades of blue indicate a more constant incidence of malaria, in humid semi-tropical or tropical areas, with abundant breeding places, but the blue nevertheless contains healthy (green) areas in which, with anopheles, there is a spleen rate below 10 per cent. and which are usually associated with extensive rice culture. A dark blue shade indicates those hyperendemic tracts, with a spleen rate of 50 to 90, often sharply defined to within a few miles, deadly to non-immunes from 1,000 to 3,000 feet in altitude, and with the essential feature of low jungle or forest-clad hills. They contain the endemic foci of black-water fever "the only essential for such a focus . . . . seeming to be the presence of resident Europeans or other susceptible race." A dark purple shade shows the other sort of hyperendemic area, that of the upper Gangetic delta, associated with decayed rivers and with lessened soil-fertility and economic prosperity. The Andaman area of high coastal endemicity, the western outpost, apparently, of the wide influence of *A. ludlowi*, has a special tone, and lastly the yellow tracts, without peril, are those lying at over 5,000 feet or so in altitude.

C. L.

MURPHY (R. A.). **A Few Notes on Malaria in Assam.**—*Proc. Assam Branch Brit. Med. Assoc. Annual Meeting, Silchar, 1st and 2nd March, 1926.* pp. 7–10.

In spite of mosquito nets, from 30 to 50 per cent. of Europeans in an average Assam district are infected yearly, but although subtertian malaria is common among them crescents are rare. In thick films, it is believed, determination of the species of malaria parasite is not generally possible. It is observed that enlarged spleen and immunity go together. Intramuscular injection is strongly advocated, "I have used them [intramuscular injections] with B. & W's. tabloids for 20 years and have had such good results, as have my Indian subordinates, that I remain unconvinced of their danger in Assam when given with reasonable care." [Murphy then characterizes certain writing by the abstracter upon intramuscular injection as "clever nonsense," a delightful oxymoron, and states that his patients, when given intramuscular injections *secundum artem*, ask for more. The abstracter has

given such injections and regretted but few; but it is impossible when reading the experiences of so many (as he has to do) to escape being deeply impressed. It is not necessary to go further from Assam than Calcutta or Malaya to find results very different from Dr. Murphy's among those whose skill and care cannot be doubted. There is certainly an unknown factor; knowledge will not come by ignoring it.]

C. L.

BRENNAN (C. H.). **Ten Months of Malaria in Kisumu.**—*Kenya Med. Jl.* 1926. Dec. Vol. 3. No. 9. pp. 261–263.

In 507 slides positive for malaria, the percentage of kind of parasite found was subtertian 80, tertian 19, quartan 1. In one subject, who was forcibly suppressed for brawling in the market place, plasmodium, not alcohol, was the excitant. In 116 Europeans using the port of Kisumu as a base 90 cases of malaria were seen in a year.

C. L.

i. VOSKRESSENSKI (B.). Le paludisme dans le district de Kouba en Azerbaidjan. [**Malaria in Azerbaidjan, (S.E. Caucasus).**]—*Trav. Inst. Microbiol. et. Hyg. d'Azerbaidjan.* Baku. 1925–26. Nos. 2–3. pp. 1–57. With 2 charts.

ii. TCHER [TCH]ECHTOFF (A.). Le paludisme dans les districts de Gandja et d'Agdam en Azerbaidjan.—*Ibid.* pp. 58–73.

iii. ——. Revue de l'activité à la station pour le paludisme à Gandja de 1923 à 1925.—*Ibid.* pp. 74–87.

iv. ALTMAN (K.). Le paludisme au long de la Koura, dans les districts d'Agdam et Guéoktschay en Azerbaidjan.—*Ibid.* pp. 88–100. [All in Russian.]

In these papers are recorded the results of malaria surveys in different districts of the republic of Azerbaidjan (S.E. Caucasus). The detailed information regarding the geography, climate, hydrography and ethnography of these regions being of purely local interest, only the incidence and types of malaria are noted here.

i. During the summer and autumn months of 1925 the author examined 1,537 persons, including 857 children under 10 years of age, the average results for the total number examined being as follows :—spleen index 63·7 per cent., Ross's index 3·4 per cent., parasitic index 15·4 per cent. The respective figures for children were 64·1, 3·4, 19·6. The predominant form of malaria was benign tertian (62·5 per cent.) whilst malignant tertian was found in 16·6 per cent. of cases. As regards the seasonal distribution, benign tertian was prevalent from May to August, malignant tertian and quartan in September, whilst in October quartan fever was dominant.

ii. The examination of 1,946 persons (including 829 children) revealed the following results :—spleen index 74·4 per cent. (in children 71), Ross's index 4 per cent. (in children 3·8), parasitic index 28·6 per cent. (in children 34·4). *P. vivax* was found in 23·7 per cent., *P. malariae* in 27·7, *P. falciparum* in 41·2, mixed infections in 7·4.

iii. The Gandja Station was founded in 1923. In the course of three years, 8,692 cases of malaria were observed and diagnosed as follows :—*P. vivax* in 865 (34·3 per cent.), *P. praecox* (*falciparum*) in 471 (18·7

per cent.), *P. malariae* in 1,026 (41 per cent.), mixed infections in 129 (5 per cent.), undetermined forms in 28 (1 per cent.). Quartan malaria was thus predominant in the region served by the Station.

iv. The author notes the prevalence of quartan malaria (73·77–77·6 per cent.) benign (8·3) and malignant tertian (7·9) along the valley of the river Koura. Further inland quartan malaria is gradually replaced by benign and malignant forms.

C. A. Hoare.

Russian Journal of Tropical Medicine. 1926. No. 3. pp. 59–65; No. 8, pp. 67–80; No. 9–10, pp. 66–78. Index bibliographique des livres et des articles sur la malaria, parus jusqu'a 1914. [**Bibliographical Index of Books and Articles on Malaria up to 1914.**]

This *Index* will be appreciated by all malariologists, especially those not conversant with the Russian language, as it provides a presumably complete list of Russian publications on malaria up to 1914, the majority of which appeared in journals or dissertations inaccessible to foreign readers. There are 953 references, the names of the authors and journals being transliterated and the titles translated into French. [As the names are spelt phonetically and arranged according to the Russian alphabet, some familiar ones are unrecognizable and cannot easily be found in the list.]

C. A. Hoare.

Martini. [Ueber Stechmücken und Malaria in der Unabhängigen Sozialistischen Räterepublik der Wolgadeutschen. **On Mosquitoes and Malaria in the Autonomous Socialist Soviet Republic of the Volga Germans.**]—*Verh. Deutsch. Ges. angew. Ent., 5. Mitgliederversamml. Hamburg 16. bis 20.* 1925. Sept. pp. 48–55. 1926. Berlin. [Summarized in *Rev. Applied Entom.* 1926. Sept. Vol. 4. Ser. B. Pt. 9. p. 159.]

"In 1925 the author studied the mosquito fauna in the region of Saratov. As a result of famine the number of cattle has been very greatly reduced, and this region is the one where malaria was most rife during the epidemic of 1922–23. The character of the country, which includes the bed of the Volga with extensive areas that are subject to flooding, is described. Some specimens of *A. bifurcatus* were taken, but *A. maculipennis*, which is mainly responsible for the malaria, predominated. The author considers that as Anophelines readily bite cattle and other animals, where the number of cattle is suddenly diminished, they are driven to feed to an abnormal extent on man. Using the formulae suggested by Ross and taking the reduced number of cattle as 20 per cent. of the former stock the author concludes that the percentage of human beings infected with malaria has risen from about 8 per cent. to 98·5 per cent., a result that explains the epidemic."

C. L.

Trabaud (M.). Le paludisme au Levant. [**Malaria in the Levant.**]—*Rev. de Méd.* 1925. Year 42. No. 10. pp. 1035–1040.

——. Aperçu sur la morbidité générale au Levant.—*Ibid.* pp. 1041–1045.

With much information of local interest is combined a record of considerable preventive activity:—drainage, issue of mosquito nets, abandonment of unhealthy cantonments, propaganda among troops and

the civil population and the expenditure of 600,000 francs on quinine. From 1919–1920 to 1921–1922 army statistics showed the following yearly malarial attacks, invalidings and deaths, 2,973, 445, 51 ; 2,393, 603, 101 ; 1,527, 359, 48. The garrison has decreased.

C. L.

CLARA (Pilade). Considerazioni sopra una statistica di malarici. [**Some Malaria Statistics.**]—*Policlinico.* Sez. Prat. 1926. Oct. 11. Vol. 33. No. 41. pp. 1432–1433.

The statistics, which cover six years, concern certain places on the right bank of the Adda in the Province of Milan. Diagnosis was chiefly clinical. It is held that anti-anopheline measures ought to be added to quininization.

C. L.

MARCHOUX (E.). Le paludisme dans les Dombes et en Camargue. [**Malaria in Les Dombes and in Camargue (France).**]—*Bull. Acad. Méd.* 1927. Jan. 11. Year 91. 3rd Ser. Vol. 97. No. 2. pp. 67–89. [2 refs.]

Marchoux contrasts the malaria in these two spots on the Rhone. Les Dombes is a plain at the junction of the Rhone and Saône, where a clay subsoil hinders percolation, and which was notorious for malaria as long ago as 1247. In 1857 at least two-thirds of the population was infected ; to-day Marchoux managed to find one case. *Anopheles maculipennis* abounds both as larvae in the pools, and as adults in cowsheds, pigsties, stables and henhouses in that order. They are also found in the houses.

Carmargue is the Rhone delta, enclosed by embankments, with a considerable salinity, more fertile perhaps than the Nile delta and largely given over to pasturage, where it supports many thousand head of sheep, cattle and horses who have no shelter. Anopheles are relatively few, and the labour foreign—Italians, Spaniards, Serbs, Armenians and Russians. Their mentality is sufficiently indicated by the mother who protected her anaemic baby from the infamous suggestion that its finger should be pricked for a blood examination.

Marchoux believes that the difference in the two regions lies largely in the stabling of cattle which takes place in the one and is lacking in the other, holding that anopheles prefer beasts, but come to human habitation when they are not able to get what they want elsewhere.

C. L.

SMILLIE (W. G.). **Studies of an Epidemic of Malaria at the Gantt Impounded Area, Covington County, Alabama.**—*Amer. Jl. Hyg.* 1927. Jan. Vol. 7. No. 1. pp. 40–72. With 9 text figs., 6 charts & 2 maps.

Observations were carried out in this area, for one year before and two years after impounding water, by a number of persons, and are admirably assembled by Smillie. That the place was situated near the field training station of the International Health Board at Andalusia has facilitated this check. In 1922 a company was permitted to begin to dam the river Conecuh on condition that the area to be flooded, together with 25 feet above high-water mark, should first

be cleared of the considerable woody growth which existed. This was improperly done, and malaria broke out. There was so much floatage that mosquito control was impossible. The lake was emptied and proper clearance started, power being temporarily obtained by a steam plant. This was burnt down and permission given to fill the lake temporarily until winter. However, malaria reappeared and in the still uncleared portion of the lake anopheline control was found impossible. Lowering the water level brought both factors under control.

The anopheles which was influenced by these measures was *A. quadrimaculatus*; *A. crucians* and *A. punctipennis* were unaffected. It is accordingly concluded that the first is the mosquito vector and that the other 2 may be disregarded in future malaria campaigns in the Southern United States.

C. L.

Borden (William B.). **Anopheles Mosquitoes and Malaria at Eastern Army Stations.**—*Milit. Surgeon.* 1926. Oct. Vol. 59. No. 4. pp. 452–469. With 5 charts. [14 refs.]

A review of the literature is supplemented by charts showing the malaria and anopheline distribution in United States army stations on the Atlantic. It is concluded that *A. quadrimaculatus* probably is the main vector; that *A. pseudopunctipennis* is not, since its prevalence postdates the autumnal malaria outbreak. Malaria is greatest from May to October, *A. quadrimaculatus* from June to October, *A. crucians* in spring and *A. punctipennis* in autumn.

C. L.

Bass (C. C.). **The Influence of Malaria on the Progress of Civilization.** *Southern Med. Jl.* 1926. Dec. Vol. 19. No. 12. pp. 851–856. [7 refs.]

The Presidential address at the 20th Annual Meeting of the Southern Medical Association gives the reasons for believing that the cultures of Greece, Rome and Ceylon declined as the result of malaria, and the speaker is inclined to add to these the civilization of Egypt. In preventing progress, malaria has been equally effective; "malaria has been the greatest obstacle to colonization by the white race, and it is a greater foe to civilization in the tropics than is any other one factor." [Even if some would put promiscuous evacuation as the predominant enemy of native races, the anopheles is not far behind.]

C. L.

Senior-White (Ronald) & Williamson (Kenneth). **The Future of Anti-Malarial Research.**—*Indian Med. Gaz.* 1927. Jan. Vol. 62. No. 1. pp. 38–47.

It is quite impossible to give any adequate extract of this paper. It deals with the monetary benefits which must follow successful research. It emphasizes the steps which led to the costly and unnecessary elevation of quinine to prominence among the cinchona alkaloids; to the need of local study of anopheles; to the cost of oiling and subsoil drainage, which is such that by their means the problem of rural malaria in India is never likely to be solved; to the effect of peaty and mineralized waters on larvae, which opens up an enormous field of investigation; to our great ignorance of the normal life processes of plasmodium and mosquito, with glimpses of knowledge such

as that the eggs of what is commonly called *Stegomyia fasciata* are dependent for their hatching upon bacterial stimulus; to ignorance of the plankton food of mosquito larvae of different species; and to many other matters of primary importance, if the malaria problem is to be solved. The paper is sure to be widely read and deeply studied, but these words merit immediate reproduction:

"But let us be clear about what we should seek, and what are the moral pre-requisites of success. First and foremost is wanted a medicament, or a physiological or physical agent, which will utterly destroy the malarial parasite from off the face of the earth. That is the root of the matter. Secondly, means far more effective than at present exist of ridding ourselves of the mosquito. And, first and last, open-mindedness and generalship to permit, promote, and apply discovery. 'The enthusiast,' Sir Ronald Ross has remarked, 'is rare: the successful enthusiast very rare.' Those words convey a warning. For enthusiasm by itself is blind; and success in medical as in other investigations has in the past been determined, and must in the future continue to be so, by imagination, penetration, and sound inductive reasoning."

C. L.

Dickinson (R. F. O'T.) **The Incubation Period in Malaria.**—*Jl. Roy. Army Med. Corps.* 1926. Nov. Vol. 47. No. 5. p. 381.

There is no malaria at Vacoas Camp, Mauritius. The incubation period of malaria in those who have paid a single visit to Fort George on the coast has been 12 to 14 days. A case is reported in which such a visit was followed by subtertian malaria in 7 days in one who had never previously suffered from malaria.

C. L.

Padilla (Tiburcio). Pruebas diagnosticas del paludismo latente. [**The Means of Diagnosis in Latent Malaria.**]—*Semana Méd.* 1926. Aug. 5. Vol. 33. No. 31 (1699). pp. 319–322. [44 refs.]

A review of those provocatives which, in latent malaria, throw parasites into the blood stream. They are classed as: (1) Those acting through protein shock, such as serum, vaccines and milk, which may produce disagreeable effects and perhaps sensitization. (2) Substances acting on the circulation—ergot, benzol, adrenalin, pituitary extract, strychnine, nitroglycerine. (3) Substances acting on the parasite—quinine and arsenic. (4) Physical means—hot and cold douches and packs, vapour baths, massage and faradization of the spleen, X-rays, insolation and exposure to ultra-violet rays. The methods advised are adrenalin injection and exposure to ultra-violet rays.

C. L.

Vestschezerow (N. I.). Einige Beobachtungen an natürlicher Infection und experimentell erzeugter Ansteckung von Anophelesweibchen mit Malariaparasiten. [**Observations on Natural and Experimental Infection of Anopheles with Malaria.**]—*Rev. Microbiol. et Epidémiol.* 1926. Vol. 5. No. 3. German summary pp. 233–235. With 6 figs. on 1 plate. [In Russian pp. 153–160. 1 ref.]

A malaria expedition by Stradomsky to the Caucasian coast of the Black Sea dissected 194 female *Anopheles maculipennis*, which after

capture in communal sleeping quarters of infected persons were kept for five days before examination. Of those first examined 20 per cent. were infected. After a month's quinine treatment of the inhabitants the anopheline infection rate fell to 7·14 per cent. The average percentage apparently for the three months, July to September, was 6·7. Sporocysts were found in 7 and "merozoits" in 6. Certain mosquitoes were bred out from larva or pupa and nourished on infected persons. Nine were fed on quartan infections, which had 65 to 372 gametocytes to the cmm., and were kept at 25–29° C. Oocysts developed in none. Four *A. maculipennis* were fed on tertian blood having 348 gametocytes per cmm. and were kept at 22·5–25° C. On the eighth day small oocysts were found in 3. Fifteen *A. maculipennis* and two *A. bifurcatus* were fed on subtertian blood having only 10 crescents to the cmm.; both species became heavily infected. Ross's black spores were found in the midgut, 5 times in natural (associated in 4 with sporozoits in the salivary glands) and once in artificial infections. Further, there were found in the salivary glands Ross's spores once and an oocyst once, a point on which stress is laid.

C. L.

Cabred (Roberto G.). El reticulo en el higado y bazo de palúdicos. [**The Spleen and Liver Reticulum in Malaria.**]—*Semana Méd.* 1926. Sept. 2. Vol. 33. No. 35. (1703). pp. 581–585. With 2 text figs.

Using a silver nitrate process, the author finds in malarial cases alterations in reticulum of spleen and liver in the direction of increase and complexity of fibrils. In the liver the change is greatest about the central lobular veins, and in the spleen it is diffuse and affects all parts including the malphigian bodies. Although care has been taken to exclude other infections, it is held not impossible that the changes may result from chronic stasis other than that due to chronic malaria.

C. L.

Thomson (John Gordon) & Annecke (S.). **Observations on the Pathology of the Central Nervous System in Malignant Tertian Malaria, with Remarks on certain Clinical Phenomena.**—*Jl. Trop. Med. & Hyg.* 1926. Oct. 15. Vol. 29. No. 20. pp. 343–346. With 2 plates. [17 refs.]

This paper is mainly concerned with "malarial nodules" in the brain, first noted by Margulis (1914) [this *Bulletin*, Vol. 5, p. 245] and latterly particularly stressed by Seyfarth. Various portions of the cerebrum of 12 cases were examined, and in 2 of them the cerebellum also. "In the case illustrated, the most striking feature was the association of these so-called granulomata with numerous punctiform haemorrhages" the haemorrhage being a precursor. Although Durck has found the two independent, Thomson and Annecke are led to consider the "granuloma" as a result of haemorrhage. They point out that chronic mental and nervous symptoms are attributed to malaria, and that, in view of such lesions as they have found, these require further study.

C. L.

Graf (E.). Beitrag zum Verlauf der Kriegsmalaria. [**The Course of War Malaria.**]—*Klin. Woch.* 1926. Sept. 17. Vol. 5. No. 38. pp. 1807–1808. [5 refs.]

It is held that seven years after the war and seven to nine years after infection cure remains uneffected in 10 per cent. of the malaria cases observed, the proportion being higher for subtertian infection. Functional disturbance of the nervous system is frequent.

C. L.

Li (K. H.). **Malaria—a Review of 90 Cases.**—*Nat. Med. Jl. China.* 1926. Aug. Vol. 12. No. 4. pp. 284–296. [1 ref.]

"A review of the records of a series of 90 cases of malaria treated [at Soochow] during the year 1924 revealed the fact that malaria was most prevalent and severe during the month of November, that the clinical manifestation was most varied, but complications were few in number; that the aestivo-autumnal type of infection was most common; and that malarial stippling of the red blood corpuscle was a distinctive feature of the blood changes associated with this type of infection; and that this stippling, if associated with a high large mononuclear count and a tenderness over the splenic region, whether it be enlarged or not, is a fair evidence of malarial infection even if the parasite cannot be found; and that for treatment, quinine in doses of 30–45 grains daily is in the majority of cases sufficient to combat the disease, although in a few cases novoarsenobenzol has a distinct and prompt effect when used in conjunction with quinine."

C. L.

Strachan (A. S.). **Cerebral Malaria.** [Notes on Cases.]—*Med. Jl. S. Africa.* 1926. Aug. Vol. 22. No. 1. pp. 13–14.

Blood and mucus, passed in 25 or more motions daily, disappeared under the emetine treatment [which is apparently considered obligatory nowadays.] A fortnight later they recurred with delirium, fever and death. At autopsy the bowel showed a few scattered submucous haemorrhages and no ulceration. Seemingly, sections were not cut from the intestine, although sections and smears showed subtertian malaria parasites in spleen, liver and particularly brain. Reference is made to Falconer and Anderson's series of malarial dysenteries with no intestinal lesions but submucous haemorrhages (this *Bulletin*, Vol. 12, p. 44).

C. L.

de Castro (A. Bayley). **A Case of Cerebral Malaria, presenting Unusual Features.**—*Indian Med. Gaz.* 1926. Dec. Vol. 61. No. 12. pp. 605–606. With 1 chart in text.

A prisoner in the Andamans had daily rigors and *P. vivax* in the blood, and was put on quinine and alkali mixture. After four days of this the temperature went up, after an initial rigor, to 104° F. Later he became violently delirious and comatose, acute pulmonary oedema supervened and he was in extremis. A sudden change in the breathing occurred with gradual regaining of consciousness and the appearance of an urticarial rash. Malaria parasites were absent from two films taken during unconsciousness. An editorial note suggests dengue as a diagnosis, since this sometimes shows cerebral symptoms.

C. L.

Dimitri (V.). Manifestaciones nerviosas del paludismo. [**Nerve Manifestations of Malaria.** *Semana Méd.* 1926. Nov. 4. Vol. 33. No. 44 (1712). pp. 1215–1219.

This paper is concerned essentially with malaria neuralgias of the cranial nerves. It is held that in these cases there is a tender tract of cranial nerve readily detectable on pressure and that it constitutes a specific index of latent malaria. These cases must be subjected to prolonged quinine treatment. Herpes zoster may occur. The conditions appear in acute or chronic malaria, and that there is a causal connexion is held to be established partly by the history and partly by the cure of the neuralgia after quinine treatment.

C. L.

de Roma (Giovanni). Orchite malarica. **Malarial Orchitis.** – *Riforma Med.* 1926. Aug. 9. Vol. 42. No. 32. pp. 764–765.

Tertian malaria was established microscopically, and with it appeared an orchitis with the usual clincial signs. The malarial manifestations and the orchitis disappeared. A month later both reappeared and progressed under three daily intramuscular injections of sterile water, to disappear rapidly under quinine.

C. L.

Mallik (K. L. Basu). **A Case of Malarial Haemoptysis.** – *Indian Med. Gaz.* 1926. Oct. Vol. 61. No. 10. pp. 501–502. With 1 chart in text. [3 refs.]

A man with scanty rings of *P. falciparum*, a temperature of 103° F., crepitations and, later, a basal patch of consolidation, coughed up blood in fairly large amount. Under intramuscular and continued oral quinine the temperature came down and, by the chart produced, did not vary by so much as a single decimal point from 98·4° for 14 days; and at the same time the haemoptysis ceased. This was considered malarial, no elastic fibres or tubercle bacilli having been found in 12 examinations and no possible source of bleeding having been detected in the nose or throat.

C. L.

Weselko (Otmar). Comparsa di suppurazioni durante la malaria. **The Appearance of Suppurations in Malaria Patients.** *Riv. di Malariologia.* 1926. May–June. Vol. 5. No. 3. pp. 303–305. With 1 chart in text. [English summary p. 351.]

"In malaria patients slight bruises may determine very severe suppurations. The writer reports about 8 cases ascertained during one year's period at the Antimalarial Station of Skradin (Jugoslavia), where he is Director, and describes one, having had a fatal issue, in a pregnant woman who showed subtertian malaria and whose shoulder joint had been struck. In all cases the pus was sterile. Histological examination showed degeneration of muscular fibres and obstruction of small arteries."

C. L.

Occhipinti (Giovanni). Di una localizzazione articolare di natura malarica. (Nota clinica). [**Relapsing Arthritis in a Case of Malaria.**] —*Riv. di Malariologia.* 1926. July–Aug. Vol. 5. No. 4. pp. 467–468. [English summary p. 552.]

In a man 55 years old, intense reactions in the tibio-tarsal articulation coincided with attacks of malarial fever or preceded them by a few days; they disappeared with quininization, whilst without the administering of quinine, they assumed greatest intensity, until they presented characteristics of acute arthritis, responding, together with the attack of fever, to quinine. No examination of the blood is reported.

C. L.

Mikéladzé (Ch.). Sur la relation entre les pressions artérielles et la viscosité sanguine chez les paludéens. [**Arterial Pressure and Blood Viscosity in Malaria.**]—*Bull. Soc. Path. Exot.* 1926. July 7. Vol. 19. No. 7. pp. 540–546. [6 refs.]

The blood pressure was determined by auscultation with a Riva-Rocci sphygmomanometer, the viscosity by Hess's apparatus. Although it was found that the pressure and viscosity both fall in malaria of all forms and that the viscosity itself falls more or less parallel with the loss of red corpuscles and haemoglobin, yet the fall in pressure cannot be due to lessened viscosity since, in individual cases, the curves of the two series may be quite different.

C. L.

Benhamou (Ed.). L'aorte dans le paludisme. [**The Aorta in Malaria.**] —*Ann. de. Méd.* 1926. Aug. Vol. 20. No. 2. pp. 145–157. With 3 plates. [Refs. in footnotes.]

Associated with malaria Benhamou finds on the radioscopic screen, so extremely frequently as to constitute a definite stigma of malaria, a regularly outlined, normally tinted dilatation of the ascending aorta accompanied by cardiac dilatation, pain, dyspnoea with air hunger, and a soft systolic, aortic murmur. All these symptoms and signs disappear when the malaria is suppressed by quinine treatment. The malaria of birds produces no aortitis; equally the conditions in man point not to aortitis, but to hypotonic, functional dilatation. The mechanism of its production is believed to be the sharp rise in maximum blood pressure which accompanies each paroxysm, since the change does not take place when paroxysms are slight or spaced. Quinine and digitaline are the drugs indicated and prophylactic quinine the best means of preventing the condition.

C. L.

Inhelder (Heinrich E.). Malaria und Askariden. [**Malaria and Round Worms.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Sept. 13. Vol. 30. No. 9. pp. 431–433. [3 refs.]

From Kayintschu, South China, Inhelder reports a boy of 5 admitted with a provisional diagnosis of meningitis. He lay moaning with head retracted, knees drawn up, belly sunken, the whole body covered with red spots, some raised, some not, some confluent forming a patch

as big as the palm of the hand. Dilated pupils, twitching limbs, nystagmus, squint, positive Kernig and Brudzinki's signs, pulse 120, pulmonary crepitations, slightly enlarged spleen, axillary temperature of 39·6°, *P. falciparum*. After taking quinine, he next morning lost his fever, but remained unconscious. Faeces extracted from the rectum showed trichuris and many ascaris eggs. Calomel and santonin removed "innumerable" ascarids, but patience did not endure beyond counting 70. The next day he was cheery and insistent in demands for toys and food. The writer publishes the case as being of a kind not mentioned in books. [Such cases, but without the rash, were not infrequent in Darjeeling District hospitals, Bengal, India, where malaria and a heavy ascaris infection often coincided.]

C. L.

Demjanow (G. S.). Ueber die Appendicitis malarica. [**Malarial Appendicitis.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. No. 26. Vol. 100. No. 7–8. pp. 348–353. With 1 text fig. [5 refs.]

It is held that the appendix reacts to malaria as to other infections by hypertrophy of its lymphatic system, and that "pigment-thrombi" must be accepted as causing appendicitis. Acute attacks and relapses are held to be associated with malaria, which can cause appendicular colic.

C. L.

Voizard (Fr.). Paludisme autochtone et somnambulisme. [**Autochthonous Malaria and Somnambulism.**]—*Bull. Soc. Path. Exot.* 1926. Oct. 13. Vol. 19. No. 8. pp. 675–676.

The "somnambulism" included a temperature of 40° C. and a sporting spectacle in which the man gave, among other events in an upper room, an exhibition of swimming, a boxing match and a 100 metre and 400 metre sprint. A similar show four days later ended by a fine dive through a window, an attendant catching him just in time to prevent catastrophe. The finding of *P. vivax* in the blood and the giving of quinine entirely stopped these nocturnal, sporting, single-entry meetings.

C. L.

Bonorino Udaondo (C.) & Sanguinetti (L.V.). [**Malarial Gastro-Enteropathies.**]—*Arch. Arg. del. Ap. Digestivo.* Buenos Aires. 1926. Vol. 1. p. 817. [Summarized in *Jl. Amer. Med. Assoc.* 1926. Oct. 30. Vol. 87. No. 18. p. 1519.]

Of ten malaria patients, acidity was increased in two and lessened in two; there was achylia in three. The gastro-intestinal disturbance of malaria is apt to be confused with that occurring from quinine administration, and in one case in which this condition improved only temporarily under quinine [perhaps by mouth] it cleared up under salvarsan. The pathological basis is referred to as gastritis, enteritis or "parasitic capillaritis."

C. L.

Teixeira (Edison). Sobre um caso de accesso pernicioso palustre de forma meningéa. [**Pernicious Malarial Attack taking a Meningeal Form.**]—*Rev. Med.-Cirurg. do Brasil.* 1926. July. Vol. 34. No. 7. pp. 292–295.

A black man of about 30, tall and strong, showed complete indifference to all his surroundings ; was irresponsive or answered vaguely and without comprehension ; speech disconnected ; incessant repetition of the word "fall" ; showed Kernig's sign, dilated pupils, and contraction of the muscles of the neck and lumbar region. Cerebrospinal meningitis, perhaps epidemic, was diagnosed. Later accessions of fever directed attention to the blood, where forms stated to be characteristic of the benign tertian parasite were found. Quinine treatment left him with no signs worth note.

C. L.

Arias Aranda (C.). [**Congenital Malaria.**]—*Arch. Latino-Amer. de Pediatria.* Montevideo. 1926. Sept. Vol. 20. p. 533. [Summarized in *Jl. Amer. Med. Assoc.* 1927. Jan. 1. Vol. 88. No. 1. pp. 65–66.]

The mother, an old malarial case, had malarial attacks during the ninth month of pregnancy. On the second day the child showed schizonts and gametocytes of *P. vivax*, and died when thirty-six hours old, partly the result of the mother's neglect.

C. L.

Money (R. Angel). **A Case of Malaria acquired in Sydney.** [Reports of Cases.]—*Med. Jl. Australia.* 1926. Aug. 28. 13th Year. Vol. 2. No. 9. pp. 283–284.

A man who had left Scotland 15 months earlier, spending a day at Port Said and another at Colombo on a direct voyage to Sydney, out of which district he had not since moved, contracted double benign tertian malaria microscopically established. The particular locality near Sydney at which the infection was presumably acquired is discussed.

C. L.

Savage (P.). **A Case of Rupture of the Spleen during an Attack of Malaria.**—*Indian Med. Gaz.* 1926. Nov. Vol. 61. No. 11. pp. 552–553.

The history is given of a British soldier who died in hospital without history of injury, nor was there any post mortem evidence of it. He had fainted before admission, but was reading comfortably in bed on the morning of his death. The abdomen was found full of blood, but the spleen so diffluent, breaking at the slightest touch, that the original lesion was not demonstrable. Rigor mortis was still present. The writer had seen another case of splenic rupture in an Egyptian labourer evacuated over an atrocious road on service. He arrived dead, splenic rupture being attributed to the severe jolting.

C. L.

Hörlein (H.). Ueber die chemischen Grundlagen und die Entwicklungsgeschichte des Plasmochins. [**Plasmochin. Its Chemistry and the History of its Development.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 3. pp. 305–310. [2 refs.]

Roehl (W.). Die Wirkung des Plasmochins auf die Vogelmalaria. [**Plasmochin and Bird Malaria.**]—*Ibid.* pp. 311–318.

Sioli (F.). Prüfung des Plasmochins bei der Impfmalaria der Paralytiker. [**Plasmochin in Inoculation Malaria.**]—*Ibid.* pp. 319–324. With 4 charts in text.

Mühlens (P.). Die Behandlung der natürlichen menschlichen Malariainfektionen mit Plasmochin. [**Treatment of Natural Malaria with Plasmochin.**]—*Ibid.* pp. 325–335.

Also in *Naturwissenschaften.* 1926. Nov. 26. Vol. 14. No. 48–49. pp. 1154–1166. With 4 charts in text. [2 refs.]

These papers deal with the new synthetic quinine substitute Plasmochin, as appears to be its English dress. Hörlein deals with its chemistry, Roehl with its action on bird malaria, Sioli with that on injected malaria of general paralytics, and Mühlens with its use in natural malarial infection of man.

The high price of quinine, the need to use large doses, its bitter taste and its failure to remove crescents from the blood have led to a search for a stronger and better drug. The structure of quinine is held to consist of a quinoline nucleus to which is attached a second ring system, the so-called chinucludin residue. Hörlein, however, looks upon it as a complicated alkalamino-6-methoxyquinoline, and considers the synthetic plasmochin as being "of the same class of body."

It has been established, notes Roehl, by Kopanaris, Marks, the brothers Sergent and Giemsa that, apart from arsenicals, the substances effective against malaria in man are effective against bird malaria. For the first time the process is reversed, and a substance giving satisfaction in bird malaria is found curative for human malaria. The method of administration here adopted has been, not intramuscular injection into the breast muscles, but injection, little by little through a tube passed into the canary's stomach, of 1 cc. of solution for each 20 gm. of body weight. Canaries injected intramuscularly with blood containing *P. relictum* show parasites in the circulating blood after 4–5 days. If a canary so injected be fed once daily with this quantity of fluid for 6 days only, the parasites will, if the solution have been of a strength of 1 in 200, 1 in 400 or even 1 in 800, first appear with regularity in the blood, never before the 10th, usually between the 11th and 12th days, or yet later; but if it be weaker than this, they will appear at the same time as in untreated controls. The highest strength tolerated is 1 in 200, the lowest effective 1 in 800, or a proportion of 1 to 4. Injecting the same quantity of fluid into the stomach for 6 days after infection, plasmochin need only be in a strength of 1–50,000 to restrain the appearance of parasites in the blood till the 10th day. It is sixty times more effective than quinine. 1 in 1,500 is the strongest tolerated solution; or a thirtieth of the strength of quinine. If stronger doses than 1 in 1,500 be actually used the period of latency may be lengthened to 6 weeks. The gastric administration of plasmochin (1 in 1,500) from 2 hours before to 6 hours after the moment of infection inhibits the appearance of parasites in the circulation, a circumstance held to be in favour of a direct action. The question came to the mind, what value have these observations for man? For instance, a man of 50 kgm. would receive at least 0·5 gm. quinine daily or 10 mgm. per kgm. A dosage of 1,800 gm. of quinine to a 20 gm. canary meant a dosage of 60 mgm. per kgm. or 6 times as much.

For a man, as Sioli notes, the first experiments showed that a dosage of over 0·05 gm. 5 times a day produced symptoms of poisoning. The upper limit was accordingly fixed at 0·05 gm. 3 times daily and

the lower, by clinical and microscopic examination, at 0·0125 gm. daily for 3 days. The dosage found effective was 0·08 gm. daily for 3 days, divided into 2 or 4 doses; treatment being resumed after 3 days and continued in this manner for 2 or 3 weeks. A single 3 days course of 0·05 gm. 3 times a day was followed by relapse at 17 days interval; if that dose were given twice a day, after 11 days; if once a day, after 9 days; in a dose of 0·025 gm. once a day for 3 days, after 4 days. No tolerance was noted. One man, who had taken in 8 days 0·6 gm., complained of hepatic pain and weakness, became ashen grey with livid lips, but with no other definite signs, except that the fresh blood was chocolate coloured and showed the methaemoglobin spectrum, as did the urine. The latter had a greyish deposit with dark supernatant fluid. On attempting to leave bed he collapsed. Recovery was rapid, but the skin did not regain its colour for 3 weeks. In 7 of 40 cases treated with daily doses of plasmochin exceeding 0·1 gm., there appeared cyanosis of the lips; in 2, there was jaundice; there were no deaths.

Regarding treatment of naturally infected persons, Mühlens notes that daily dosage of 0·1 gm., or at most 0·15 gm., was taken by patients for several days without ill effects, that capsules of 0·05 once or twice daily or tablets of 0·02 (which may be broken up in water) 5 times daily, were administered without complaint of taste, for the preparation is quite tasteless, but that cyanosis of lips, tongue, gums and finger nails showed after the higher doses. The interrupted treatment may be continued for 4 to 6 weeks, but the drug has been given continuously for 14 days. Tertian and quartan parasites disappear from the peripheral blood more rapidly than subtertian, and cure is more readily effected in these infections by plasmochin than by quinine, the reverse holding for schizonts of *P. falciparum*, although crescents disappear rapidly with the new drug. Great stress is laid upon this hygienic sterilization of subtertian malaria, and the findings are held to be contrary to SCHAUDINN'S idea of parthenogenesis of schizonts from crescents, seeing that crescents disappear but relapses continue. These have amounted to 31 per cent., as against 59 for quinine. Tablets of combined quinine 0·125 gm. and plasmochin 0·01 gm., in subtertian malaria particularly, will attack all the human life stages. The cyanosis is not considered as an intoxication symptom, but an unaesthetic vasomotor effect of a neuropathic nature, and the drug is advised for blackwater fever.

This conclusion is in face of Sioli's demonstration of methaemoglobinaemia and of a urinary condition which appears to be that of blackwater fever induced, be it noted, in *P. vivax* infection.]

C. L.

PROCTOR (A. H.). **The Dispensary Treatment of Malaria in India.** *Indian Med. Gaz.* 1927. Jan. Vol. 62. No. 1. pp. 36–38.

There are two important points raised here. The first is the inadequacy of quinine administration in outlying dispensaries in Bengal, where, constantly, a single dose is administered unless the patient brings a phial—which he is unlikely to do. If he should, he gets one day's medicine. Probably he does not come back and quinine falls into disrepute. Again, the grant allotted for medicines is quite inadequate to supply the quinine necessary, so that in one case the dosage per ounce was cut down to 5 instead of 10 grains, and the stock bottle

proved on analysis to contain only 3. The second point is an agitation, or policy, in Bengal to start medical schools in various Districts, utilizing the Sadar or District-headquarters hospitals, with their limited staffs, unsatisfactory buildings, poor sanitation and equipment, lack of special departments and almost absolute lack of nursing. It certainly seems an excellent move from the point of view of those who desire to bring "European medicine" into disrepute.]

C. L.

Viswanathan (A.). **Intramuscular Quinine Injections in Malaria.** — *Indian Med. Gaz.* 1926. Aug. Vol. 61. No. 8. p. 398.

Quoting Colonel Proctor's opinion, that "nothing would induce him to have an intramuscular injection of quinine," the writer instances 300 cases, which leave him unconvinced as to its supposed dangers. The precautions taken to prevent pain and abscess were—the strictest asepsis, a solution not stronger than five grains in 20 minims, different needles for drawing quinine into the syringe and for injection—so that there was no quinine outside the needle, emptying the needle of air (though presumably not carried so far that any quinine escapes), injection into the upper and outer part of the gluteus, gentle massage, rapid withdrawal of the needle to prevent the solution following it along the track and producing pain in the subcutaneous tissue, and the closure of the opening by collodion or friar's balsam. The ideal subject is a "stout muscular person"; [and does not the explanation of the freedom from pain and induration lie, at least in part, just there; for fortunately most of us are, both in fingers and glutei, quite unlike the princess with her pea and her mattresses.]

C. L.

Houssiau & Duwez (José). Quinquinas et quinine. **Cinchona and Quinine.**—*Bruxelles-Méd.* 1926. Aug. 29. Vol. 6. No. 44. pp. 1288–1295. [5 refs.]

Some matters of interest emerge from familiar surroundings. Intramuscular injections may safely reach in bulk 6 to 8 cc. in the fat, half that quantity in the lean. The risk of haemoglobinuria from heavy quinine injection in the Belgian colonies is grave. There is a very useful table showing the confusion between the French and Belgian nomenclature of the salts of quinine. A prescription for neutral sulphate of quinine will be dispensed as the sulphate in Belgium and the bisulphate in France, and one for the neutral chlorhydrate will be interpreted as the hydrochloride in Belgium and the bihydrochloride in France. The matter is of some importance, since Burroughs and Wellcome tabloids, presumably those sold in Belgium, are labelled in English "Quinine Bisulphate" (soluble sulphate of quinine) and in French "Sulfate neutre de quinine," which does not conform to Belgian custom.

C. L.

Arroyabe (Vicente) & Alvarado (Ricardo). Sobre un método práctico de tratar la intolerancia para la quinina. **A Practical Method of treating Quinine Intolerance.** — *Bol. Inst. Clin. Quirurg.* Buenos Aires. 1926. Apr. Vol. 2. No. 11. pp. 145–146.

An Italian of 27, suffering from malaria, stated that when treated with quinine he suffered from violent pruritus involving the whol-

body, accompanied by sneezing and lacrimation. The symptoms came on 15 or 20 minutes after taking quinine by mouth or injection, and lasted for about ten hours. *P. falciparum* being found, and the susceptibility being confirmed, he was given an injection of 1 cc. of adrenalin solution, followed in 20 minutes by one of 0·05 gm. of quinine, without ill effects. The next day he received a like treatment, the dose of quinine being, however, raised to 0·5 gm. After 4 days of this treatment, the quinine was raised to 0·75 gm. for 3 days, with a slight but perfectly tolerated reaction. A final injection of 1 gm. gave little trouble.

C. L.

Ascoli (Victorio). El tratamiento especifico del paludismo. [**Specific Treatment of Malaria.**—*An. del Depart. Nac. Hig.* Buenos Aires. 1925. July–Dec. Vol. 31. No. 2. pp. 11–24.

This paper, presented to the International Malaria Conference held at Rome in 1925, contains, besides much that is common knowledge, the following points. The irritant and necrotic action of quinine is such that when subcutaneously or intramuscularly injected its strength should not exceed 0·3 to 0·5 gm. per cc. and the total quantity 2 cc.; otherwise it may produce an inflammatory reaction, aseptic or septic as the case may be, with slow absorption. Extirpation of primitive malaria requires 1 or 2 months treatment for tertian but 6 or 7 for subtertian malaria. After noting other drugs, the pre-eminent position of quinine as an antimalarial remedy is emphasized.

C. L.

Tanon (L.) & Jamot (E.). Le quino-thorium dans le traitement du paludisme. [**Quinothorium in the Treatment of Malaria.**] *Rev. Méd. et Hyg. Trop.* 1926. July–Aug. Vol. 18. No. 4. pp. 105–110.

Quinothorium is a solution put up in ampoules of 2 cc., of which each contains 0·5 gm. of "chloroformate de quinine" and 0·1 mgm. of mesothorium, which is the adult dose, given by intramuscular injection into the gluteal region below the horizontal line, passing through the tip of the great trochanter. The injection is painful, particularly apparently if too near a bone. Between 10 and 20 years of age, the quantity is two-thirds of an ampoule; and from 2 to 10 years, a half. The doses are given daily for 6 days and then every other day. Twelve or more ampoules are given. Several illustrative cases of its action on *P. vivax* infection are described where it produced apparent disinfestation, in one over an observation period of fifteen months, when there was said to have been difficulty in effecting this with quinine. It is suggested that the radioactivity of bromide of mesothorium adds to the effect of quinine.

C. L.

Waldorp (Carlos P.). Tratamiento del paludismo por la asociación del sulfato de berberina por via digestiva y el sulfato de quinidina per os o intramuscular. (Nota preliminar). [**Treatment of Malaria by combining Berberine by Mouth with Oral or Intramuscular Quinidine.**]—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1926. Apr. Vol. 2. No. 11. pp. 133–135. [5 refs.]

Berberine is used as a provocative in tablets of the sulphate containing 0·2 gm., of which 8 or 10 daily are given to adults and half the

quantity to children. This will transform a simple tertian or quartan fever to a double one. When the fever is well alight intramuscular injections 0·25 gm. of sulphate of quinidine are repeated daily for 10 days. In heart-block quinine is substituted for quinidine. It is noted that the treatment has been checked by blood examination. Details are not supplied.

C. L.

Quintana (Héctor) & Álvarez Soto (Napoleón). La berberina en el tratamiento del paludismo. [**Berberine in the Treatment of Malaria.**]—*Semana Méd.* 1926. Oct. 7. Vol. 33. No. 40 (1708). pp. 943–945.

This alkaloid obtained from the root of *Berberis* sp. acts on the smooth muscle of the spleen which it reduces in size. A large experience over 14 years has convinced the writers that, although given alone it is useless, when associated with quinine it gives results, especially when there is chronic splenic enlargement, constantly superior to those of quinine alone. No figures are supplied.

C. L.

Gravot. Quelques observations au sujet de l'action exclusive du stovarsol sodique sur le paludisme à *Plasmodium vivax*. [**The Action of Sodium Stovarsol in Benign Tertian Malaria.**]—*Ann. de Méd. et de Pharm. Colon.* 1926. July–Aug.–Sept. Vol. 24. No. 3. pp. 350–361.

Thirteen cases are reported in which 1, or sometimes 0·75 gm., of sodium stovarsol was injected intravenously or intramuscularly, generally once only, and where thereafter *P. vivax* had disappeared over an observation period of several weeks. It is urged that this injection is painless, effective and without reaction and should be employed for every one under military control during any period of active operations. It should, however, be noted, that the first case reported had, 7 hours after an intravenous injection, a dyspnoeic crisis with rapid, short breathing, right-sided intercostal pain and diffuse bronchitic râles, explained as coincidence of a bronchitic attack with the injection.

C. L.

Alvarado (Ricardo) & González (Conrado). Observaciones sobre el Stovarsol por via digestiva en el paludismo. [**Oral Stovarsol in Malaria.**]—*Bol. Inst. Clin. Quirúrg.* Buenos Aires. 1926. Apr. Vol. 2. No. 11. pp. 87–89.

Stovarsol tablets (0·25 gm. each) were given to 5 persons, three taking 12, one 13, and one 20. The observation period appears to have been 3 days. In 4 cases (*P. vivax* 1, *P. malariae* 2, *P. vivax* and *P. malariae* 1), no parasites were detected in the second examination. In the fifth (*P. falciparum*) they persisted in smaller quantities.

C. L.

Marchoux (E.) & Quilici (P.). Le stovarsolate de quinine dans la tierce maligne. [**Stovarsolate of Quinine in Subtertian Fever.**]—*Bull. Soc. Path. Exot.* 1926. Nov. 10. Vol. 19. No. 9. pp. 782–783. [1 ref.]

Referring to the work of Boyé [this *Bulletin*, Vol. 23, p. 820] the writers report a case (presumably put to bed) taking 2 tablets of stovarsolate of quinine or 0·25 gm. quinine daily. On the third day the temperature fell to normal and schizonts had disappeared, but crescents continued in spite of there being no break in treatment. The total dosage is not stated.

C. L.

Aguirre Plata (Carlos). Los accidentes del 914 y el Paludismo. [**Malaria and Ill Effects of "914".**]—*Repert Med. y Cirug.* Bogota. 1926. May. Vol. 17. No. 8 (200). pp. 457–462.

Intravenous injections of "914" can produce immediate and delayed ill effects. Immediately there may appear signs of "protein shock"—swelling and redness of face, lips, eyelids and tongue, difficulty in swallowing, acceleration of the pulse, flushes of heat, cerebral oppression, tinnitus, vertigo, dyspnoea, collapse, vomiting, diarrhoea, death. Nevertheless, where quinine resistance is held to have occurred, 914 is credited with brilliant results in malaria. No details are given.

C. L.

Large (D. T. M.) & Bonavia (V. J.). **Arsenic and Antimony in Malaria.**—*Jl. Roy. Army Med. Corps.* 1926. Dec. Vol. 47. No. 6. pp. 430–438.

Forty severe relapsing cases of malaria with enlarged spleen and anaemia are reported. Since officers treated for malaria in India do not relapse with that frequency with which the men do, it was thought that a deficiency of vitamins in the diet of the latter might be a factor of importance. Accordingly those used in this series had a diet under which a gain of half a pound a day was normal, and there was no difficulty in filling the special ward where such fare was forthcoming. Stovarsol, soamin, kharsulphan were the arsenicals and von Heyden 471 the antimonial given. None of the drugs used proved superior to the quinine given to 7 controls who "were treated as malaria is treated in all military hospitals." Three of the controls relapsed. Diet did not prevent relapse and it is suggested that one of the factors which does so in the case of officers is the early treatment which the better informed officer has obtained, and his persistence therein. The men constantly had several attacks, so they reported, before going sick.

C. L.

Joukowsky (J.). [Au sujet du traitement de la malarie par soluisin.] [**Treatment of Malaria with Soluisin.**]—*Russian Jl. Trop. Med.* 1926. Nos. 6–7. pp. 7–10. [In Russian.]

The author records the results of treatment of 20 malarial cases with a modified preparation of soluisin (for which the following prescription is given—"hydr. bichlor. corros. 1·4; natri arsenic. 0·5; natri iodati 24·0; stib. kali tartar. 0·1; aq. dest. 100·0"), which was first applied in malaria by Dr. Priadko, in Turkestan. The course of treatment consisted of 12 intramuscular injections, which were administered for 2–3 days in succession, followed by intervals of 1–2

days. The interruptions were necessitated by development of pain at the site of injection and, in some cases, by gingivitis, stomatitis and diarrhoea. It is also noted that the injection of soluisin caused a reaction in temperature.

The individuals selected for treatment were suffering from chronic malaria and had previously undergone repeated treatment with quinine. They were all emaciated with severe anaemia, and unfit to carry on their ordinary occupation. In 3 cases no parasites were found, though all the clinical symptoms of malaria were present; in the other 17, plasmodia representing all the 3 types of malaria were found, the subtertian predominant. The complete disappearance of gametes was usually observed after 3–4 injections. Eight patients received the full treatment with soluisin, and 5 had 8–10 injections. Positive results were obtained in 10 of these 13 cases. Eight of these were kept under observation for three months, and showed no more signs of malaria. Their physical condition improved considerably and they were all able to return to work. Five of these cases were examined 1½ years after treatment and proved to be in perfect health.

C. A. Hoare.

Eubanas (Froilan). **Mercurochrome Soluble-220 in Malaria.** —*Jl. Philippine Islands Med Assoc.* 1926. July. Vol. 6. No. 7. pp. 215–218. [11 refs.]

Seven lepers, 5 with tertian and 2 with subtertian malaria parasites detected in the blood, were treated with mercurochrome soluble-220, five with 1 and two with 2 intravenous doses, usually of 3 mgm. each. Ill effects (chilliness, headache and slight fever appearing 2 to 6 hours after injection) were slight or absent, and at the same time malarial symptoms, such as fever, were apt to disappear, giving a suggestion of clinical cure. Parasites persisted, however, in all cases.

C. L.

Alvarado (Ricardo) & Arroyabe (Vicente). Tratamiento de los vómitos de origen palúdico por la adrenalina. [**Treatment of Malarial Vomiting by Adrenalin.**] —*Bol. Inst. Clín. Quirúrg.* Buenos Aires. 1926. Apr. Vol. 2. No. 11. p. 111.

The writers have obtained immediate and certain results in malarial vomiting by 1 or 2 milligramme doses of adrenalin (this *Bulletin*, Vol. 23, p. 527). They attribute the condition to adrenal insufficiency and correlate it with cases of asthenia for which the blood condition does not account.

C. L.

Le Roy des Barres. Du traitement chirurgical des splénomégalies palustres non compliquées. [**Surgical Treatment of Uncomplicated Malarial Splenomegaly.**] —*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 2. pp. 277–316. With 2 figs. on 1 plate. [45 refs.]

The writer is concerned with the excision of the simple malarial spleen, or of that accompanied by splenic anaemia. Surgical interference is held to be indicated if, after medical treatment properly carried out, the spleen is still of a "dangerous" size—that is, presents 3 finger-breadths below the costal margin, or is painful. A contra-

indication is myeloid leucaemia, and adhesions may render the operation impossible. For the operation very full details are given, its mortality in the writer's hands being 5 to 10 per cent. "The influence of splenectomy on the evolution of malaria is always favourable."

C. L.

Leitch (J. Neil). **The Treatment of Malaria: a Plea for Isolation.** —*Indian Med. Gaz.* 1926. Nov. Vol. 61. No. 11. pp. 543–545. [2 refs.]

The line of argument is:—Gametocytes, the source of mosquito infection, do not develop until a week after fever begins; diagnosis is easy and positive; infection can only be transmitted by the anopheline mosquito, from which the patient can be completely isolated by screening; he can then be, in a relatively short time, cured of his malaria without possibility of relapse; and the cure can be confirmed by the microscope. That the premises are not all correct in this case does not detract from the advisibility of screening the sick.]

C. L.

Giemsa (G.), Weise (W.) & Tropp (C.). Chemotherapeutische Studien mit Vogelmalaria (*Plasmodium praecox*). [**Chemotherapeutic Studies in Bird Malaria.**] —*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Aug. 1. Vol. 30. No. 8. pp. 334–347. [12 refs.]

The normal course of infection with *Plasmodium praecox* in 15 canaries is tabulated. The maximum infection shows itself about 10 days after inoculation; in 3 of the birds it persisted till, and apparently caused, death; in the other 12 it gradually lessened until no parasites could be found in the peripheral blood. In 3 cases quinine hydrochloride, and in other three aminohydroquinine, was injected into infected canaries on 4 consecutive days, the solution being of 1 per cent. strength and the quantities 0·3 cc. on the first day and 0·25 on the others. Neither drug disinfected, parasites appearing about 10 days after the cessation of injections of the drug (instead of 10 days after infection as in controls), but the blood infection when it showed itself was less severe. Of three cases similarly treated with cinchonine 1 died, 1 showed parasites equally throughout the treatment and subsequent observation period, and the last was free from them during treatment, but plasmodia appeared immediately afterwards and after 10 days increased in numbers.

It is concluded [it seems on uncertain grounds] that bird malaria forms a model means by which the chemotherapy of malaria can be studied and a table is inserted [whose + symbols are not those of previous tables and whose — ones mean "to" and not "minus"] in which effects of drugs on bird and human malaria are contrasted. The quinine molecule is then considered.

C. L.

Morgenroth (J.), Abraham (L.) & Schnitzer (R.). Experimentelle Studien zur Malariabehandlung. [**Experimental Studies on Malaria Treatment.**] —*Deut. Med. Woch.* 1926. Aug. 27. Vol. 52. No. 35. pp. 1455–1457. [10 refs.]

The effects on canaries of quinine, hydroquinine and optochin are compared. The birds had injected into one breast 0·04 cc. of infected

blood and into the other the drug, this treatment being continued for from 4 to 17 days. The dosage was 0·3 cc. of a 1 in 250 solution, except that, in the case of optochin the strength was sometimes 1 in 300. It is not easy, from the data given, to be satisfied that any treatment was essentially more effective than the others.

C. L.

Brünn (W.). Perorale Chininprophylaxe bei der Proteosomapraecox-Infektion. [**Quinine Prophylaxis per os in *Proteosoma praecox* Infection.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. June 7. Vol. 98. No. 7–8. pp. 507–513. [13 refs.]

Daily oral administration of 0·1 cc. of a 2 per cent. solution of hydrochloride of quinine to canaries infected with *P. praecox* holds off manifestations of malarial infection as long as the dosage is continued, and does not interfere with the subsequent establishment of natural immunity. The longer the administration is continued the lighter will be the subsequent manifestations, for the infection continues although no parasites are found in the peripheral blood, seeing that injection of the blood of the treated bird will induce infection in another canary.

C. L.

i. Roy (Anukul Chandra). **On the Estimation of Minute Quantities of Quinine in the Blood.**—*Indian Jl. Med. Res.* 1926. July. Vol. 14. No. 1. pp. 129–133. [3 refs.]

ii. Hatcher (Robert A.) & Weiss (Soma). **Studies on Quinin.**—*Jl. Pharm. & Experim. Therap.* 1926. Oct. Vol. 29. No. 1. pp. 279–296. [17 refs.]

i. For the isolation of quinine from blood, the method described by Acton and King (this *Bulletin*, Vol. 20, p. 59) is used, but for the estimation of the recovered alkaloid the author employs, in place of Tanret's reagent, an acid solution of iodine, made by diluting 25 cc. of N 100 iodine solution to 250 cc. with N 100 hydrochloric acid.

With this reagent he claims to be able to estimate differences of 0·002 mgm. and 0·001 mgm. over concentration ranges of 0·045 to 0·03 mgm. and 0·03 to 0·001 mgm. respectively, in a total volume of 5 cc., whilst 0·0005 mgm. in 5 cc. or 0·0001 mgm. in 2 cc. can be detected, when matched against a blank.

ii. The authors find that quinine can be extracted almost quantitatively from defibrinated blood by simple agitation with chloroform. This method is not applicable to separated corpuscles or to tissues, and in these cases the material was dissolved in a 5 per cent. solution of caustic soda and the quinine then extracted by chloroform. The residual alkaloid left on removal of the solvent was dissolved in dilute acid, the solution filtered, if necessary, then made alkaline, and the alkaloid re-extracted and weighed, the weight so found being checked by titration of the residue with bromine water.

Using these methods, it was found that when quinine is added to cats' blood it is sometimes "fixed" by the corpuscles, so that it cannot be washed out by normal salt solution, but is still recoverable by shaking with chloroform. Injected intravenously into cats or dogs 95 per cent. of the alkaloid disappears from the blood within one to 5 minutes, but traces are discoverable in the case of the dog as much as 15 hours

afterwards. The alkaloid is fixed by the capillaries immediately after intravenous injection, and they probably play an important part in returning it to the circulation. It is promptly fixed by the lungs, liver, heart, kidney and brain in higher concentration than the average for the remainder of the body, but is given up rapidly, so that after 3 hours scarcely any remains in any of these organs.

No explanation of the therapeutic action of quinine is based on these results, but it is suggested that the fixation by the capillaries leads to more intimate contact between the protozoa affected and the alkaloid.

T. A. Henry.

Grossmann (Ernst). Ueber die Adrenalinlymphozytose bei Malaria. [**Adrenalin Lymphocytosis in Malaria.**] *Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Nov. 1. Vol. 30. No. 11. pp. 684–701. [19 refs.]

One milligramme of synthetic adrenalin hydrochloride injected subcutaneously into each of 20 cases of malaria always resulted in a general leucocytosis including lymphocytosis. The maximum number of white corpuscles was reached in 10 to 40 minutes. The most striking rise was one in 10 minutes from 5,600 to 30,400 per cmm. At the height of this general rise the percentage of lymphocytes was, with one exception, always raised, the increase in actual numbers per cmm. varying between 920 and 10,314. If the absolute increase were less than 1,500 the reaction was described as negative, if over 2,500 as positive. Period of infection, species of malaria, age of patient, and size of spleen appeared to have no influence on this reaction.

C. L.

Wiechmann (Ernst) & Horster (Hermann). Studien ueber experimentelle Infektionskrankheiten. II. Mitteilung. Physikalische und chemische Untersuchungen des Blutes bei der experimentellen Malariainfektion des Menschen (Ausgeführt mit Unterstützung der Rockefeller Foundation.). [**Chemical Examination of Blood in Experimental Malaria.**—*Deut. Arch. f. Klin. Med.* 1926. Aug. Vol. 152. No. 3–4. pp. 136–152. With 1 curve. [28 refs.]

Between injection of infective malarial blood and the appearance of fever there occur, first a fall and then a rise in the protein content. With fever the protein again falls, but the chemical change precedes the febrile one; and is associated with an alteration in vascular tone. With convalescence the protein content again rises.

In the incubation period serum globulin is in excess, this excess disappearing during convalescence. Regarding serum albumin, in incubation it lessens, with the onset of fever it generally falls and does not increase immediately on disappearance of fever.

C. L.

Maciel (Heraldo). A proposito de um caso de azotemia palustre. [**Increase of Blood Urea in Malaria.**]—*Sciencia Med.* 1926. Aug. 31. Vol. 4. No. 8. pp. 410–416. With 1 chart. [2 refs.]

In a man with aortic insufficiency, and with heart, as well as ascending transverse and descending aorta, dilated, the blood urea varied from

2·44 to 0·99 and 0·36 per thousand. *Plasmodium falciparum* was present without splenic or hepatic enlargement, headache, or large mononuclear increase, but with continuous fever lasting 17 days.

C. L.

Raúl Goyena (Juan). Las modificaciones de la fórmula leucocitaria y la imagen neutrófila de la sangre en las anemias palúdicas. [**Changes in the Leucocytes and in Arneth Count in Malarial Anaemia.**]—*Semana Méd.* 1926. Sept. 30. Vol. 33. No. 39 (1707). pp. 838–853.

In 76 cases, polymorph neutrophils generally constituted 20 to 60 per cent. of the leucocytes. Frequently there was no eosinophilia. Basophils were absent in 90 per cent. Lymphocytes commonly lay between 30 and 50 per cent. and large mononuclears between 5 and 20. Metamyelocytes were present in 46 cases. Arneth's counts gave :— Deviation to the left 59 per cent., to the right 36, no deviation 5.

C. L.

Callanan (J. C. J.). **A Side-Light on the Production of** *Plasmodium tenue* **(Stephens).**—*Kenya Med. Jl.* 1926. Oct. Vol. 3. No. 7. pp. 182–192. With 3 plates. [12 refs.]

When examining films containing "*tenue*" forms of *P. falciparum* Callanan noticed that they tended to preponderate in certain portions of the film, and he proceeded to determine whether he could produce them deliberately. He found that the rate of drying had no influence in the production of such forms, but that what he designated as "pressure" but which "is actually a combination of pressure, adhesion, surface tension, and possibly other physical and mechanical conditions," did have such influence. For example, in an area where erythrocytes were heavily superimposed, ring forms alone were present, whereas the same blood if so spread that it formed "a layer of single cells, for the most part in close opposition, forming a mosaic pattern" ring forms comprised 13 per cent. and tenue forms 87 per cent. Similarly fresh blood preparations showed no tenue forms. It is accordingly concluded, that "forms morphologically indistinguishable from those described as *Plasmodium tenue* may be produced simply by the factors involved in the process of smearing the blood on the slide, which are alluded to under the term "pressure."

At a meeting of the Royal Society of Tropical Medicine and Hygiene held on 20th January, Professor J. W. W. Stephens, in Discussion, referred to this paper. He did not think that Dr. Callanan was dealing with *P. tenue*, since his figures were nothing like Professor Stephens' own specimens. He agreed that parasites at the edge of slides were often irregular in form when those in the centre were rings. This reference to *P. tenue* was provoked by Major Sinton's report that *tenue* forms were absent from the many thousands of cases he had examined in the Punjab, but present, as reported by himself and others, from areas, in India and elsewhere, in which blackwater fever existed.]

C. L.

PERKROPOFF (G. J.). Sur la question du développement atypique des parasites de la tierce bénigne. [**A typical Development of Parasites of Benign Tertian.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. July 6. Vol. 99. No. 1–3. pp. 115–129. With 48 figs. on 2 plates. [39 refs.]

Another of those curious cases is described in which smears show *tænia* or other bizarre forms as well as typical *P. vivax*. There are 48 figures in two plates, illustrating some of the changes seen. The writer is satisfied that he can distinguish from one another (from the period before penetration of the erythrocyte to that of full growth) the sexual and asexual forms and illustrates, without hesitation in identification, the division of microgametes into spores (p. 124, line 2). [These are indeed trying times for the male.]

C. L.

ANNETT (S.). **The Relative Numbers of Male and Female Gametocytes in Human Malaria** (*Plasmodium vivax*, *Plasmodium falciparum* **and** *Plasmodium malariae*) **and** *Haemoproteus* **in Birds.**—*Proc. Roy. Soc. Med.* 1927. Jan. Vol. 20. No. 3. pp. 267–271. (Sect. Trop. Dis. & Parasit. pp. 1–5). [11 refs.]

After considering the findings of others, the writer notes, that his own observations are as follows:—

	Male gametocytes.	Female gametocytes.
P. falciparum	1,085	3,591
P. vivax	172	437
P. malariae	55	221
"*Haemoproteus*"	784	1,178

C. L.

HEGNER (R. W.). **Asexual Reproduction without Loss of Vitality in Malarial Organisms.** *Science.* 1926. May 7. Vol. 63. No. 1636. pp. 479–480. [4 refs.]

Plasmodium praecox, the parasite of bird malaria, has been propagated entirely without the mosquito in canaries in Baltimore and New York, in the latter place since 1913. In this case it is calculated that there have occurred 3,648 consecutive asexual generations. Taking the interval of sporulation and the virulence as indices of vitality, the strain is as potent as ever. It would have been interesting and valuable had the question of persistence of gametocytes been touched upon.

C. L.

YOSHINO (Masutaka). Ueber die Moglichkeit der Uebertragung menschlicher Malaria-plasmodien auf Versuchstiere. [**Possibility of Transmission of Malarial Plasmodia to Animals.**] *Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 9. pp. 624–626. With 16 text figs.

Yoshino claims that, injecting subcutaneously a large number of *vivax* guinea-pigs, rabbits and dogs with blood from a man with tertian malaria, he has found rings in the blood of the experimental animals, from the second to the eighth day. Gametes have not been seen, nor rings after the eighth day. Not only has he carried infection from man

to guineapig, but from guineapig to guineapig, that is to say, in series of three hosts—man, guineapig, guineapig. The paper is illustrated by a plate of figures.

C. L.

HANSCHELL (H. M.). **Notes on Malaria in the Treatment of General Paralysis of the Insane.** *Brit. Jl. Ven. Dis.* 1926. July. Vol. 2. No. 7. pp. 235–242. [26 refs.]

In this paper, with its fully acknowledged indebtedness to this *Bulletin*, the following facts are new or distinctively stressed:—The spontaneous disappearance in one case of fever and of parasites from the cutaneous blood for 3 days, both then reappearing and paroxysms becoming severer than ever: a temperature of 107° F. in a sporozoit infection; the need of relying not merely on the temperature chart and the blood for signs of danger to life, but of keeping a continuous clinical watch on the patient, particularly in the case of a man who is, as the patients concerned are, already necessarily damaged by syphilis; the onset of fever and reappearance of malaria parasites in cutaneous blood in "established" but latent cases of malaria treated with arsenobenzol and bismuth or mercury for concomitant syphilis, and the record that after injection of *P. vivax* into general paralytics the fever can be cut out by neosalvarsan in these not "established" cases. Lastly, there is the experience of relatives, who inquired threateningly (in a mosquito infected case) whether the patient's worsened condition was not due to his having been injected with insane syphilitic blood, and the comment that it is easier to use mosquito-sporozoite infection than to find a certificate of the trophozoite-donor's moral and physical worth.

C. L.

i. DANTE (Ferraro). Come dobbiamo valutare nella pratica corrente (e militare) la terapia della paralisi progressiva, con la malaria inoculata. **The Value of Malarial Therapy in General Paralysis.** —*Ann. di Med. Nav. e Colon.* 1926. Sept.–Oct. Year 32. Vol. 2. No. 3–4. pp. 149–159. [29 refs.]

ii. BOSCH (Gonzalo) & MÓ (Arturo). Malarioterapia y parálisis general progresiva. Tratamiento mixto.—*Semana Méd.* 1926. No. 4. Vol. 33. No. 44 (1712). pp. 1204–1209.

i. A neurological study collects from the literature the mental effects of treatment by malaria in 3,193 cases, although even then the English cases at least are not all reported. The percentage of complete remission was 30, of marked but incomplete remission 20, of slight improvement 20, of no change 20, while the percentage of deaths attributable to the malarial infection was 10.

ii. The corresponding figures in 50 cases here reported are:—returning to their profession 20, greatly improved 28, slightly improved 14, not improved 18, deaths (which are held not attributable to malaria) 6, still with active malaria 14.

C. L.

Plehn. Die Malariabehandlung der progressiven Paralyse und der Tabes. **Malaria Treatment of G.P. and Tabes.**—*Deut. Med. Woch.* 1927. Jan. 1. Vol. 53. No. 1. pp. 7–9. [13 refs.]

The points of main malarial interest are the experience that the several strains used have not altered in virulence by their direct passages through man, and that it is not the case that a strain necessarily loses its gametes by such continual passages. Plehn again mentions the one which, after 2 years during which no gametes were detected, suddenly took to producing them, and 2 others which have persistently formed gametes. And there is this sentence, the mark of a man of courage: "moreover one should be honest—it is almost impossible on purely morphological grounds to distinguish from a gamete a ripe tertian schizont about to sporulate." C. L.

Cuboni (E.) Gametenfreie *Plasmodium vivax*-Stämme. [**Gamete-Free Strains of** *P. vivax*.]—*Wien. Klin. Woch.* 1926. Dec. 16. Vol. 39. No. 51. pp. 1475–1476. [6 refs.]

Doerr and Kirschner have shown that both the strains of *P. vivax* employed at Wagner-Jauregg's clinic were originally gamete-bearing. Now, after 143 and 134 direct passages, they are entirely without gametocytes. This has been determined in 50 blood examinations of 14 persons, each examination comprising examination of 4 thin and 2 thick preparations taken after the host had undergone 7 or 8 attacks of fever and at all periods of the cycle. In no case were schizonts so few as not to be detectable in a thin film. Dionisi's theory is quoted:—that the sexual elements are predetermined in certain sporozoits in the mosquito, that they do not all develop at once, some lying low in internal organs, but that when they have done so the strain becomes gamete-free. C. L.

Wagner-Jauregg (Julius). Einige Bemerkungen ueber Impfmalaria. I. Ueber den Typus der Fieberanfälle. [**Remarks on Inoculation Malaria. I. The Type of Fever.**—*Wien. Klin. Woch.* 1927. Jan. 6. Vol. 40. No. 1. pp. 26–27. [5 refs.]

The originator and most experienced observer of injected malaria begins a series of notes on that subject. Regarding the rhythm produced, he points out that if blood from the same man be injected into two others, one may have tertian and one quotidian attacks, and either kind may pass into the other or into a mixed type, while parasites may be present in the blood in all stages. Moreover, a strain which has passed through a number of human passages, giving in each a purely tertian fever, may suddenly alter and produce daily attacks. These characteristics have not been produced as a result of many direct passages, but have been present from the beginning. He refers to James's work, showing that parasites are present in all stages of growth in mosquito-borne malaria even when infection has been by a single mosquito biting once; and to his further observation, that in these natural cases there is a first stage of irregular fever as Korteweg indicated; in 80 per cent., a second quotidian stage; merging into a frankly tertian. In 10 per cent. the form of these mosquito infections was initially tertian and in 10 it began as tertian and became quotidian.

C. L.

Driver (J. R.); Gammel (John A.) & Karnosh (L. J.). **Malaria Treatment of Central Nervous System Syphilis. Preliminary Observations.**—*Jl. Amer. Med. Assoc.* 1926. Nov. 27. Vol.87. No. 22. pp. 1821–1827. With 1 chart in text. [20 refs.]

The paper reports 79 cases of syphilis of the central nervous system treated by benign tertian malaria, which is described as asexual and which was passed on by intravenous injection of 2 to 8 cc. of blood. There were 6 "failures to inoculate," although 1 was successful on repetition. The indications for interrupting the malaria or, put otherwise, the signs held to be of grave malarial prognosis, were: (*a*) Blood urea of over 70 mgm. per 100 cc.; all the cases showed evidence of severe toxaemia; and all but one recovered on quinine administration, and he had had an increase of urea of 300 mgm. (*b*) Fall of systolic blood pressure below 95 between rigors, a fall below 90 being usually followed by collapse. (*c*) Severe icterus with an index above 50. (*d*) Red cell count below 2,000,000 or progressive anaemia without further rigors. (*e*) Profuse vomiting and diarrhoea. Stress is laid on the value of close clinical observation so that, with experience, "laboratory tests become of value chiefly as symptoms arise which indicate their use."

C. L.

O'Leary (Paul A.), Goeckerman (William H.) & Parker (Stephen T.). **Treatment of Neurosyphilis by Malaria. Further Observations.**—*Arch. Dermat. & Syph.* 1926. Nov. Vol. 14. No. 5. pp. 550–556. [7 refs.]

The cases considered number 100. In 2 the writers were "unable to produce malaria," that is presumably fever, since *P. vivax* was found in the blood of each of them for 3 weeks. In 2 others the "malaria" aborted after the fourth and sixth rigors. Successful inoculations were made from all 4. Reinoculation was unsuccessful in 5 instances, at intervals of 8 to 15 months after the first malarial course. There have been no deaths attributed to malaria.

C. L.

Rudolf (G. de M.) & Ramsay (J. C.). **Enumeration of Parasites in Therapeutic Malaria.**—*Jl. Trop. Med. & Hyg.* 1927. Jan. 1. Vol. 30. No. 1. pp. 1–8. With 14 charts. [8 refs.]

The number of parasites present in a given quantity of cutaneous blood has been enumerated in a series of cases of therapeutic malaria. In nearly every instance there were fewer half grown parasites found in the peripheral blood than there had been sporulating forms of the previous generation, and similarly there were usually many more older forms than there had been young ones. The last difference is held too great to be explicable on the supposition that it was merely due to the overlooking of young forms. The question of an internal habitat is considered. There is a tendency for gametocytes to vary in like proportion with asexual forms. In 5 out of 10 patients there was a relationship between the number of parasites and the degree of fever.

C. L.

Nicole (J. Ernest) & Steel (John P.). **Post-Malarial Condition of the Cerebro-Spinal Fluid in G.P.I.** – *Lancet.* 1926. June 5. pp. 1091–1092.

The authors in a former paper [*Lancet.* 1925. Oct. 31] had endeavoured to show that some alteration does actually take place in the cerebrospinal fluid after malaria therapy in G.P.I. The globulin content is much diminished, and Lange's colloidal gold test is less typically paretic than before treatment. Since then they have re-examined some of their recorded cases and also investigated others. The table (40 cases) accompanying this paper shows that the C.S.F. changes appear at the end of 12 months after malaria is terminated; that with still further lapse of time the change continues, and that the Lange reading becomes even more like a tabetic condition. The change usually begins at the paretic end of the curve. In some of their cases nothing higher than a "2" had been obtained in paretic, luetic, or meningeal colds. They emphasize the fact that diminution in the globulin content of the cerebrospinal fluid cannot be taken as a sign that the mental condition is improved; illustrative cases of this are quoted, as are others showing that one may, however, expect some improvement in health and habits with the coincident lessening of globulin, cells, and reducing power of the C.S.F. Furthermore, coincident increase of globulin, cells and reducing power, and steady physical deterioration, have been noted. A second series of malarial rigors had no quickening effect on the changes in the C.S.F.; nor did "914" therapy after the malarial pyrexia. They find in their series of cases no support for the thesis that the number of malarial rigors sustained has any effect on the C.S.F.

H. M. Hanschell.

Spiethoff (B.). Die Kupierung der Impfmalaria durch Salvarsan und Spirocid. [**Salvarsan and Spirocid as Abortives of Inoculation Malaria.**]—*Muench. Med. Woch.* 1926. Dec. 31. Vol. 73. No. 53. p. 2246.

The cure of inoculated malaria is held to be better effected by salvarsan and "spirocid" than by quinine, since the last is believed to have a greater weakening effect on a heart already handicapped by fever. If the fever be quotidian, 0·3 gm. of salvarsan (or 0·45 gm. of neosalvarsan) is injected on 2 consecutive days; if tertian, the interval is increased to 48 or 72 hours. "Spirocid" is given in 4 tablets (3 for a woman) repeated in 8 hours and thereafter daily for 7 days. There follows a 4 days pause and then a repetition of the treatment. No evidence is offered for any of the statements made.

C. L.

Voitel (Karl Hermann). Ueber die Wirkung des Eosins bei der Abstellung der therapeutischen Impfmalaria. [**Action of Eosin in the Suppression of Therapeutic Malaria.**]—*Klin. Woch.* 1926. Nov. 5. Vol. 5. No. 45. pp. 2117–2118. [4 refs.]

In 20 cases 1 gm. of quinine was given by mouth, and 0·05 gm. eosin in normal saline was injected intramuscularly or subcutaneously. The results seem to have been much as if only quinine were injected. In 4 more of these deliberately infected cases there is said to have been

qiniune resistance [all other writers have commented on the case of disinfestation], in 2 the fever fell after two eosin injections, in 1 cellulitis resulted ; the fourth died. In 1 case reported, death is acknowledged to have resulted from pneumonia.

C. L.

Baker (Geoffrey T.). **General Paralysis associated with Benign Tertian Malaria.** [Memoranda.]—*Brit. Med. Jl.* 1926. Oct. 16. p. 685,

——. **A Case of General Paralysis with Benign Tertian Malaria.** *Lancet.* 1926. Oct. 30. p. 903.

A man with a history of malaria and of heat stroke and with a completely positive Wassermann reaction was admitted to the Kent County Mental Hospital in January, 1926, confused, disorientated, wet, dirty, hallucinated and restless. In August he had 2 bouts of tertian fever and benign tertian parasites were found in the blood. After 17 rigors, quinine treatment was begun, but he died on September 6th without mental improvement. General paralysis occurred then, in spite of " malaria of long standing " and " a further severe relapse of malaria in no way hindered the progress of the cerebral condition to a fatal termination." The date of the original malaria is unnoted, nor is it indicated whether other general paralytics were undergoing malaria treatment in the hospital at the time.

C. L.

Bering (Fr.). Die Behandlung der Tabes mit Malaria. [**The Malarial Treatment of Tabes.**]—*Dent. Med. Woch.* 1926. Sept. 17. Vol. 52. No. 38. pp. 1611–1613.

62 cases seem to have been treated with three deaths, 1 after taking " Albert 102," 1 from multiple renal abscess and 1 after 4 malarial attacks without distinct rigors and with the temperature only twice reaching 40° C.

C. L.

Muratowa (A.). Ueber atypische Schizogenien bei Impfmalaria. [**Atypical Schizogony in Inoculation Malaria.**]—*Arch. Russes de Protistologie.* 1925. Vol. 4. No. 1–2. German summary pp. 73 74. With 6 figs. on 1 coloured plate. [In Russian pp. 67–73. 8 refs.]

Pointing out that the biological effects of passing malaria parasites from man to man by injection have been imperfectly studied, Muratowa describes a case of *P. vivax* infection so induced in which double and triple infections of a single corpuscle with rings were not uncommon and infections with a macrogamete and a ring sometimes seen. Yet other appearances, however, he holds to be schizogony of a macrogamete. The evidence offered that it was a macrogamete is the presence of pigment in rodlets and the absence of a vacuole. The absence of visible division between the dividing body and what he calls the " reduction " part, with the carrying of the dividing nuclei into the latter ; the absence of male gamete characters ; and the degenerate and vacuolated character of the " reduction " body are his reasons for excluding a double

infection in these instances. The German summary contains no information as to the mode of preparation, which was presumably the usual thin smear.

C. L.

Lenzmann (R.). Ueber Behandlung der chronischen Gonorrhoe durch Malariaübertragung. [**Treatment of Chronic Gonorrhœa by Malaria Inoculation.**]—*Deut. Med. Woch.* 1926. Sept. 17. Vol. 52. No. 38. pp. 1608–1610.

Noting that concomitant gonorrhoea was bettered in syphilitics undergoing malaria treatment, Lenzmann infected with malaria 73 subjects with gonorrhoea, 68 women and 5 men. All 5 men and 53 (78 per cent.) of the women were cured. The malaria followed the usual course, and was treated by a complicated course of quinine.

C. L.

Gamble (Clarence J.). **Failure of Therapeutic Malaria in Treatment of Leukemia.**—*Jl. Amer. Med. Assoc.* 1927. Jan. 8. Vol. 88. No. 2. pp. 87–90. With 4 charts in text. [7 refs.]

Infection was obtained in two cases, one myelogenous, 1 lymphatic, by intramuscular injection of 5 cc. of malarial blood taken during a paroxysm. There was a great decrease of leucocytes continuing so long as paroxysms lasted, but the leucocytes approximated to their previous level 3 and 6 days after termination of malarial paroxysms by quinine.

C. L.

Schumacher (Josef). **Nonspecific Stimulation Therapy, Wassermann Reaction and Syphilis Therapy with Living (Malaria) and Dead Lipoid-Albumin Compounds. (A Contribution to the Mode of Action of Antisyphilitic Remedies).**—*Amer. Jl. Syph.* 1926. July. Vol. 10. No. 3. pp. 432–438. [4 refs.]

"The *mode of action of malaria therapy*, according to our present investigations, is based upon the extensive destruction of red blood corpuscles and other tissue cells (spleen, etc.), through the infection, with the resulting development of *autogenous lipoid-albumin compounds*, which occur in a similar way, following the syphilitic infection of a tissue. These lipoid-albumins also act as an antigen in this case, the symptoms of the defensive activity of the system being expressed by an *increased production of lipoproteolytic ferments*. It is to the action of these ferments that those spirochetes succumb which are located in the brain and cord, and which are otherwise out of our reach."

C. L.

Donath (Julius) & Heilig (Robert). Zur Wirkungsweise der Impfmalaria. [**Action of Therapeutic Malaria.**]—*Wien. Klin. Woch.* 1926. Mar. 25. Vol. 39. No. 13. pp. 353–355. [19 refs.]

Their previous investigations concerning the behaviour of amino-N. in the blood in artificially induced fever (produced by such agents as milk, typhoid vaccine, trypsin and colloidal sulphur in man, and nucleic acid in animals) showed that at the height of the action of these bodies there was a rise of body temperature accompanied by a regular and considerable increase of amino-acids in the blood. Whereas, in cases of general paralysis of the insane and in Parkinsonism following

encephalitis lethargica treated by artificially induced malaria, there was no increase in the amino-acid content of the blood.

They reasoned that the amino-N. increase in the blood has a double origin, in part proteid disintegration at diseased foci (focal reaction), and partly proteid disintegration throughout the body (general reaction). If the reaction is general, the amino-N. increases in the blood, but if focal it increases locally, for example, in the cerebrospinal fluid.

Working on this hypothesis amino-N estimations of the cerebrospinal fluid were carried out by the Von Slyke method at the height of the fever produced by the injections of typhoid vaccine, milk, and the parasites of malaria and recurrent fever. The results showed that the greatest increase of amino-N content in the cerebrospinal fluid occurred in artificially induced malaria, was less in induced recurrent fever and after typhoid vaccination, and that there was no increase after milk injection.

From this they infer that in recurrent fever and after typhoid vaccine there is a general reaction with increase of amino-acid in the blood and a certain diffusion of these acids into the cerebrospinal fluid, whereas in induced malaria there is no general reaction and no increase in the amino-acid content of the blood, but there is a focal reaction in the central nervous system, as is shown by the increase in the cerebrospinal fluid. Similar results as regards the amino-N content of the blood were obtained by F. WAGNER in his investigations with naturally acquired tertian malaria and recurrent fever.

They conclude that this conception of the focal reaction, especially in the central nervous system, in artificially induced malaria coincides with the views of NONNE, STRAUSLER, and KOSKINDS as regards the therapeutic action of the malarial parasite in the treatment of general paralysis. This theory is further supported by histological evidence of focal inflammatory areas in the brains of paralytics dying whilst under this treatment, and clinically by certain physical states and attacks of pain observed in the course of a malarial cure.

H. Whittingham.

SERIO (Francesco). Tentativi terapeutici con l'inoculazione sperimentale della malaria. [**Therapeutic Tests with Experimentally Inoculated Malaria.**]—*Policlinico.* Sez. Prat. 1926. Oct. 25. Vol. 33. No. 43. pp. 1490–1493. [7 refs.]

Three cases are described in which malaria was deliberately injected subcutaneously, two held to be tertian and the other quartan. In the last the possibility of a mixed tertian and quartan infection seems possible from the course of the fever. The features of malarial interest were the irregularity of the fever, the practical absence of gametocytes and the susceptibility of the parasites to quinine.

C. L.

OUDENDAL (A. J. F.). **Enquiry into Spleen-Palpation, based on the Weight, Situation, Shape and Dimensions of the Enlarged Spleen in Post Mortem.**—*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 2. pp.235–248. With 31 figs. on 13 plates.

This is essentially a record of post-mortem examinations. After death in adult male Javanese, in whom the suprasternal notch and the

symphysis pubis are separated by the same distance, the positions of the nipples, navel and rib margins do not correspond when transferred to a chart. The same holds for living boys between 8 and 12. Equally, there is no relationship after death between the weight, length, and marginal thickness of the spleen, and, of course, no correlation with its consistence. All these points are held to be important in spleen palpation.

C. L.

Fajardo (Jacobo), Lopez-Rizal (Leoncio) & Padua (Regino G.). **A Study on the Determination of Spleen Index in Filipino School Children.**— *Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 2. pp. 249–269. With 4 charts.

Padua (Regino G.). **Further Studies on the Index Line in Malarial Splenomegaly.**— *Jl. Philippine Islands Med. Assoc.* 1926. Mar. Vol. 6. No. 3. pp. 77–83. [3 refs.]

It may be remembered that at the 4th Congress of the Far Eastern Association of Tropical Medicine the best means, for international use, of measuring the amount of splenic enlargement was considered, and that Christophers, with and without the co-operation of Kazan, considered the matter with exactitude, concluding that during splenic enlargement the splenic apex so rarely deviated from its normal route that it could be mapped on a standard abdominal chart, worked out for a sitting height of 60 cm., by measurement of its distance from the umbilicus corrected by a Table (this *Bulletin.* Vol. 21, p. 597). As the basis of his measurement Kuno selected the clavicle-iliac line, lying between the top of the sterno-clavicular joint and the anterior superior iliac spine of the same side. In the first paper now reviewed, the conclusion is reached that the clavicle-iliac line is a satisfactory base line, and in the second that the mid-clavicular line is equally satisfactory.

C. L.

Barreto (João de Barros) & de Almeida (Egydio). Malaria e habitação. Fundamentos da lucta em domicilio contra os anophelineos adultos, particularmente pelos expurgos periodicos. [**Domiciliary Measures against Anopheles Adults.**]—*Sciencia Med.* 1926. Nov. 30. Vol. 4. No. 11. pp. 577–587.

The importance of house infection in malaria which has recently been stressed by the League of Nations Malaria Commission, and particularly by James, is emphasized by a number of quotations from authorities. The position is described thus :—The species of anopheles which prefer human habitations are those recognized as being of the greatest importance in the conveyance of malaria. They have a tendency to return to the same house or to a neighbouring one and are apt to be naturally infected. There is apt to be a parallelism between anopheline density and malaria in houses, and more than one case is likely to occur in the same house. Consequently, there should be intensive and persistent domiciliary warfare against anopheles.

C. L.

Gioseffi (M.). Le "Gambusie" nella lotta antimalarica in Istria. [**Employ of Gambusia for the Control of Malaria in Istria.**]—*Riv. di Malariologia.* 1926. July–Aug. Vol. 5. No. 4. pp. 469–475. [8 refs.] [English summary p. 552.]

Gambusia imported from America by the good offices of the U.S. Fishery Board have shown up to the present in Istria that they are an effective and economic means of larval control; they withstood the heat of summer, as they did the cold of winter of 1925 26; from the waters where they were introduced they have made the larvae of the anopheles practically disappear. Gioseffi credits them with a beneficent action on the endemic malaria (disappearance of primary cases in a zone of 1,360 inhabitants under his control.)

C. L.

Álvarez (Washington). Paludismo y gestacion.—*Semana Méd.* 1926. Dec. 9. Vol. 33. No. 49 (1717). pp. 1561–1564.

Ascoli (Vittorio). La terapéutica especifica del paludismo.—*Siglo Méd.* 1926. Aug. 21. Year 73. Vol. 78. No. 3793. pp. 162–166.

Bard (Leopoldo). El paludismo. Un factor de despoblación.—*Repert. de Med. y Cirug.* Bogota. 1926. Aug. Vol. 16. No. 11 (203). pp. 642–648.

Bras de Sá (L. J.). Malaria no Concelho de Satari.—*Arquivos Indo-Portugueses de Med. e Historia Nat.* Nova-Goa. 1926. Vol. 3. pp. 326–335. With 4 figs.

Delamare (G.). Tierce bénigne chez une femme enceinte (nombreuses plasmodies anormales).—*Ann. de Méd.* 1926. Mar. Vol. 19. No. 3. pp. 289–300. With 1 text fig. [3 refs.]

Houssiau (F.). Barême des invalidités en ce qui concerne la palidisme et les maladies exotiques.—*Bruxelles Méd.* 1926. Aug. 15 & 22. Vol. 6. Nos. 41–42 & 43. pp. mclxxxvi–mcxc; mccxvi–mccxx.

King (W. V.) & Bradley (G. H.). Airplane Dusting in the Control of Malaria Mosquitoes.—*Jl. Trop. Med. & Hyg.* 1926. Sept. 15. Vol. 29. No. 18. pp. 311–313. With 8 text figs. [*v. Bull. of Hyg.* Vol. 2. p. 66].

Kondo (Kiichi). [Malarial Hemolytic Jaundice.]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. Nov. No. 2446. [Summarized in *Japan Med. World.* 1926. Feb. 15. Vol. 6. No. 2. p. 42.]

de Langen (C. D.). Studies concerning the Relation of the Malarial Parasite to the Erythrocyte.—*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 2. pp. 17–25. [*v.* this *Bulletin*, Vol. 23. p. 821.]

Mendel (Kurt). Epilepsie und Malaria.—*Med. Klin.* 1926. Nov. 12. Vol. 22. No. 46 (1144). pp. 1770–1771.

Morgenroth (J.), Abraham (L.) & Schnitzer (R.). Experimentelle Studien zur Malariabehandlung.—*Deut. Med. Woch.* 1926. Aug. 27. Vol. 52. No. 35. pp. 1455–1457. [10 refs.]

Morishita (Kaoru). Note on the Natural Enemies of Mosquitoes, and their Significance in Malaria Control.—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1926. Aug. No. 257. English summary p. 5. [In Japanese.]

Rega (Michele). Un caso d'infezione mista (Simbiosi) tifo-malarica.—*Riforma Med.* 1926. Dec. 20. Vol. 42. No. 51. pp. 1220–1221.

Senior-White (Ronald). Some Ideas engendered by Recent Work on Malaria.—*Indian Med. Gaz.* 1926. Sept. Vol 61. No. 9. pp. 456 458 [*v.* this *Bulletin*, Vol. 23. p. 804].

Sergent (Et.) & Catanei (A.). Résultats obtenus par l'administration de faibles doses quotidiennes de quinine, de cinchonidine ou de cinchonine aux indigènes paludéens en Algérie.—*Arch. Inst. Pasteur d'Algérie.* 1926. Mar. Vol. 4. No. 1. pp. 35–48. With 3 graphs in text. [4 refs.] [*v.* this *Bulletin*, Vol. 23, p. 548].

Weiss (E.). Unübertragbarkeit der Impfmalaria durch Anophelen.—*Wien. Klin. Woch.* 1926. Dec. 23. Vol. 39. No. 52. pp. 1507–1508.

Zambrano (José M.). Esterilización del hombre enfermo. Quininización y otros medios.—*Semana Méd.* 1926. Aug. 19. Vol. 33. No. 33 (1701). pp. 475–479.

PELLAGRA

Sutton (Irwin C.). **Pellagra.**—*Amer. Jl. Med. Sci.* 1926. Sept. Vol. 172. No. 3. (No. 654). pp. 374–382. With 4 figs. [12 refs.]

The author's observations are based upon the study of a series of pellagra cases numbering in all 56. No mention is made of where these cases occurred, but it may be assumed that the locality was California. The previous diet of the patients is not discussed, except to say that, in many instances it was "high-protein." Three types of the disease are described—early cases with trivial symptoms, severe cases with marked symptoms and cases in which the pellagra condition is overshadowed by some complication. Five examples are given illustrating these types.

Of the 56 cases, 30 were females and 26 males. The youngest patient was 6½ years, the oldest 67. The total number of deaths in the series was 11, 3 of these from cancer. Only eight of the cases were admitted to hospital.

The clinical and laboratory findings are discussed under the headings of the systems involved, but nothing striking or unusual is to be noted. The same is true of the necropsy findings in 5 cases.

Under the heading "differential diagnosis" means of distinguishing pellagra from other diseases are suggested. The diagnosis may be confused with that of pernicious anaemia, lupus erythematosus, dermatitis venenata, erythema solare, trichophytosis and acrodermatitis chronica atrophicans.

The treatment of those patients admitted to hospital consisted in abrupt change of diet to one of high protein and vitamin content. Hourly feeds of whole oranges, including seeds and rind, and boiled beef steak were instituted. The ambulatory patients were treated by a gradual change of diet. Mercury and arsenic in some form were used as an adjuvant to the above treatment both in hospital and in ambulatory cases. Intestinal parasites when present must be dealt with, and pellagra was found to be no bar to surgical procedures when these were necessary. The ambulatory cases seemed to progress more favourably than those in hospital.

The author concludes that "pellagra is probably not a simple deficiency disease like beriberi or scurvy" and that "while the causative agent may not be known it is probably of an infectious nature and gives rise to a substance which sensitizes the patient to sunlight."

A. D. Bigland.

Itoh (Minoru). Ueber Pellagra in Japan. [**Pellagra in Japan.**]—*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 1. pp. 315–333.

Records of 12 cases showing erythema of the hands with other symptoms are given. From the description of the rash, from the history of the onset (always in spring or summer), from the diarrhoea (5 cases), from the stomatitis (4 cases), from the psychic changes (2 cases), from the dysesthesia (9 cases) and from the paretic ataxia (7 cases) the diagnosis is almost certainly pellagra.

Examination of the blood revealed slight anaemia in 5, a relative lymphocytosis in 6 and increased sedimentation in 5. The Wassermann reaction was positive in 3 cases and the von Pirquet in 2.

Eight of the cases were treated with an extract of rice husk. As a result, symptoms began to lessen almost at once and in a few months all traces of the disease had disappeared without relapse.

A survey of all hitherto reported cases of pellagra in Japan is undertaken. The total number is 60. These were found everywhere in the main island (Honshu) and also in Korea and Formosa. Practically no cases occurred on the north island. In no instance was there any family history of the disease. The ratio of male to female incidence was 41 to 16 and the ages varied from 21 to 60. Those attacked by the disease were chiefly ill-nourished workmen living upon a diet of polished rice. Diarrhoea occurred in 27 cases and 18 showed stomatitis and indicanuria. Eight patients presented pellagra psychosis and many more had peripheral neuritis, which in 19 closely resembled beriberi.

Thirty-two out of 37 cases had a negative Wassermann reaction and 8 out of 32 showed a positive von Pirquet. The disease runs a very chronic course and the mortality is 27 per cent.

Post-mortem findings include catarrh and ulceration of the gastro-intestinal tract, degeneration and atrophy of the organs and fatty degeneration and atrophy in the cerebral cortex and spinal cord. Four cases were complicated with phthisis and 3 with emphysema.

The author concludes that pellagra is an avitaminosis. He quotes the work of others in favour of this view and remarks that all but one of his cases lived upon polished rice. Treatment with rice husk extract is strongly advised.

A. D. B.

SHELLEY (Horace M.). **Observations on Pellagra in Nyasaland.**—*Lancet.* 1927. Jan. 8. pp. 74–75. With 2 diagrams.

The observations made by the author in this paper are apparently the same as those made by him in the *Nyasaland Protectorate Ann. Med. Rep.* 1924, and in the *Kenya Medical Journal*, 1925, Vol. 2, No. 8. An abstract of this work will be found in this *Bulletin*, Vol. 23, p. 685.

A. D. B.

STANNUS (Hugh S.). **Pellagra in Nyasaland.** [Correspondence.]—*Lancet.* 1927. Jan. 15. pp. 156–157. [3 refs.]

Dr. Stannus in this letter replies to some observations made by Dr. H. M. SHELLEY in the paper cited above. The writer points out that in his already published work it is clearly stated that cases of pellagra occurred not only in the Central Gaol, but also among the general population of Nyasaland. He mentions that post-mortem specimens from 9 cases were sent to Dr. Kinnier WILSON, who published a report in 1914 dealing chiefly with the neurological findings. Chronic diffuse degeneration involving practically the whole of the central nervous system was observed, and it seemed probable that these changes were produced by a toxin "entering the theca by the lymphatic spaces of the posterior roots."

The writer does not agree that the dermatitis of pellagra is the result of a neuritis affecting particular nerves. He is of the opinion that the

action of the sun's rays is the only cause of the particular distribution of the rash and that the areas involved do not strictly correspond with those of either nerve roots or peripheral nerves.

Similar disagreement is recorded with the view that there are true resemblances between pellagra and myxoedema and with the statement that deficient thyroid secretion is an essential factor in pellagra.

A. D. B.

Viswalingam (A.). **Pellagra in the Malay States, its Etiology and Treatment.**—*Far Eastern Assoc. Trop. Med. Trans. Sixth Biennial Congress, Tokyo, 1925.* Vol. 1. pp. 307–314. With 4 plates.

Pellagra was first recognized in the Malay States by the author in 1917. The first case occurred in the State of Perak, but since then the disease has been observed in other States and in the Central Mental Hospital.

Etiological factors are discussed. So far the disease has only been noted among Chinese labourers engaged in the tin mines, rubber plantations, etc. The work is particularly strenuous and the diet is both monotonous and deficient in protein and also in fat-soluble and water-soluble vitamins. Clothing, soil and housing are apparently unimportant factors. Under these adverse conditions it is not surprising that beriberi, dysentery, malaria, ankylostomiasis, etc., are also present and play their part in debilitating the worker.

Three typical cases are described in some detail and the author gives his views regarding etiology and treatment. "Prolonged faulty diet is not in itself a cause of pellagra, though it may be the chief determining factor. An unhealthy gut mucosa appears to be essential. It favours the absorption of toxic products from the contents of the intestine, thereby producing that intoxication of the tissues which is the real cause."

Correcting intestinal stasis, when present, by surgical means and the administration of vitamin extracts are successful methods of treatment.

A. D. B.

Lopez Prior (Andrés). Un foco de pelagra en Caldas de Reyes, provincia de Pontevedra. [**A Centre of Pellagra in Caldas de Reyes, Province of Pontevedra.**]—*Bol. Técnico de la Dirección General de Sanidad.* Madrid. 1926. Vol. 1. No. 4. pp. 273-280. With 2 coloured plates.

In the course of his visits as Health Officer the author studied 49 cases of pellagra in the district of Caldas de Reyes, and it is probable that there were some 100 pellagrins in this small area. More than half the patients were over 50 years of age; 94 per cent. were labourers, and women were attacked more than men, in a proportion of 3 to 2.

Several cases might occur in a family, but there was no evidence of hereditary transmission, and the fact could be explained by exposure to a common source, though it would appear that some members of a family were more susceptible than others. A large proportion of the patients lived in a state of poverty and under insanitary conditions. The food was largely maize bread mixed with rye, but the author, from examination of the food question, did not find much support for a food-deficiency theory of causation. Again, though Stomoxys and Simuliidae were frequent all over the Province, they were not more

numerous in Caldas de Reyes than in parts where there was little or no pellagra. The paper is illustrated by an excellent coloured plate of the hand of a pellagrin in an advanced stage of the disease.

H. Harold Scott.

Arzt (Leopold). Ueber versprengte Pellagra im neuen Oesterreich. [**Sporadic Pellagra in Post-War Austria.** –*Wien. Klin. Woch.* 1926. Sept. 16. Vol. 39. No. 38. pp. 1057–1058. [7 refs.]

Three sporadic cases of pellagra occurring in New or post-war Austria are described. All 3 were females, and all appeared to have had an alcoholic tendency. The first one was the first case described in pre-war Austria by Merk. Though her rash was first noticed in 1911, she was admitted to a skin clinic again in 1925 and therefore appears in this series. The rash in all 3 cases first showed itself in April, May or June. No definite treatment was given and all recovered.

[The only interesting point in these cases is the alcoholic history. Alcoholism without doubt with its resulting loss of appetite is equivalent in effect to a food deficiency.]

A. D. B.

Davie (T. M.). **A Case of Pellagra.**—*Jl. Mental Sci.* 1926. Apr. Vol. 72. No. 297. pp. 211–214. [2 refs.]

The patient, a male, had the following history: –He had worked for over 20 years as a maltman in a brewery. He was in the habit of chewing barley and occasionally also maize. Apparently, many years before his attack of pellagra developed he had given up his work and with it his chewing habits. He always had a poor appetite and his diet was deficient, especially in respect of animal protein.

In November 1923 he began to present mental symptoms, and after a sojourn in the Edinburgh Royal Infirmary he was admitted in February 1924 to Morningside Asylum. The patient was kept on the verandah. Soon his mental confusion improved, but great depression took its place. In August 1924 the pellagrous eruption was first noted. He was treated with Bovril, cod-liver oil, fruit and green vegetables, and by November the pigmentation had practically disappeared. Some rigidity of the legs was present and diarrhoea occurred in attacks towards the end of the year. Blood examinations showed a slight anaemia and a relative lymphocytosis. Dr. Susman reported that the red cells "showed in many cases definite, well defined, colourless, homogeneous areas of degeneration." There was some renal inadequacy as revealed by the phenolsulphonephthalein test. In June 1925 a small ulcer appeared on the tongue. Later this proved to be an epithelioma and not long afterwards the patient died of broncho-pneumonia.

The author concludes by stating that in 1921 4 cases of pellagra were treated at Morningside and another 4 cases in 1924.

A. D. B.

Lewis (Edward). **Pellagra: Report of a Case in a Child aged Seventeen Months.**—*Amer. Jl. Dis. Children.* 1926. Aug. Vol. 32. No. 2. pp. 226–231. With 7 text figs.

A typical case of pellagra exhibiting the rash, sore tongue, diarrhoea, etc., is described in a coloured boy aged 20 months. The disease is

relatively infrequent in the District of Columbia, where the child lived, and it is rare under the age of 2 years. Apparently the condition had been present for about 3 months before admission to hospital. The child had been breast-fed exclusively up to the age of 6 months and his diet since had been fairly good, except for a complete absence of cows' milk and vegetables.

In addition to pellagra, rickets was present, together with symptoms suggestive of beriberi and scurvy.

Treatment was as follows:—The child was given 1 gm. of yeast vitamin powder (Harris) in 1 teaspoonful of water t.d.s., together with fresh cows' milk, expressed beef juice and orange juice. Later cereal jelly, "scraped beef cake" and cod-liver oil were added and the yeast vitamin powder supplanted by "commercial yeast cake." Later still, vegetables were included in the diet. Improvement was rapid and he increased about 40 per cent. in weight during his stay in hospital.

The sporadic nature of the disease together with the associated conditions suggest to the author that the pellagra in this case was probably due to faulty diet.

The very clear photographs of the case together with the fact that Dr. GOLDBERGER himself saw the child leave no doubt as to the correctness of the diagnosis.

A. D. B.

GOLDBERGER (Joseph). **The Present Status of our Knowledge of the Etiology of Pellagra.**—*Medicine.* 1926. May. Vol. 5. No. 2. pp. 79–104. With 5 charts. [67 refs.]

There is no new work described in this lecture, but the author gives a very full account of the arguments in favour of the faulty diet etiology of pellagra. Goldberger states that if this view be correct 4 implications, which the hypothesis carries with it, must also be true. These are (1) that a difference between the diet of pellagrins and non-pellagrins must be demonstrated. (2) That the disease must be curable by proper diet. (3) That it must be preventable by this diet. (4) That the disease must be experimentally produced by diet.

These 4 "implications" are thoroughly investigated and the rôle of P—P factor in pellagra is demonstrated.

A. D. B.

FAUST-NEWTON (Cosette). **Dietary Factor in Treatment and Prevention of Pellagra, with Particular Reference to Yeast.**—*Southern Med. Jl.* 1926. Mar. Vol. 19. No. 3. pp. 168–175. With 2 charts in text. [75 refs.]

This paper was read before the Medical Section of the Southern Medical Association at the 19th annual meeting, held at Dallas, Texas, in November 1925. The treatment of the subject is largely a recapitulation of already published work.

The author concludes, after a study of the evidence, that it is definitely established that the dietary factor is by far the most important one in the causation of pellagra; that the taking of sufficient Vitamin B, or possibly the unknown P—P vitamin, is essential; and that dried brewers' yeast is almost a specific for the disease.

With these conclusions it is suggested that an active educational campaign should be instituted in pellagrous districts, and that a series

of accurate records of the results following the propagation of the above views should be kept for a period of at least 5 years.

Charts are presented showing how closely pellagra incidence coincides with general economic conditions.

A. D. B.

KARCZAG (L.). Zur Biologie und Klinik der Pellagra. **Biology and Symptoms of Pellagra.**—*Wien. Klin. Woch.* 1926. Dec. 9. Vol. 39. No. 50. pp. 1449–1451.

In the opinion of the author, acute pellagra as it occurs in guinea-pigs fed with maize differs from the human disease.

Experiments are described dealing with three groups of guineapigs having 10 members in each group.

Group 1. Tuberculous guineapigs fed on ordinary diet.

Group 2. Maize fed guineapigs.

Group 3. Controls.

It was found that in Group 2 alopecia, herpetic eruptions, diarrhoea and a paralysis of the hind legs occurred. One animal showed erythema.

In Group 1 paralytic symptoms were also found to occur and alopecia seemed to be present in any animal which was under-fed and, therefore, cannot be regarded necessarily as a pellagra symptom. Herpetic eruptions only occurred in the maize-fed animals.

From these experiments, the author concludes, the disease in maize-fed guineapigs has no analogy with human pellagra.

Post-mortem examinations of some of these animals revealed haemorrhages in the suprarenals and the work of others is quoted to show that in human pellagra a similar finding has been recorded.

The conclusion reached is that pellagra results from the chronic action of a toxin upon the chromaffin system and possibly upon other endocrine organs.

A. D. B.

SERBINOV (I. L.). **On the Present State of the Question of "Pellagra" in Relation to the Theory of Maize "White Mould".**—*La Defense des Plantes.* Leningrad. 1926. Vol. 2. No. 7. pp. 546–556. With 6 figs. [Summarized in *Rev. Applied Mycology.* 1926. Dec. Vol. 5. Pt. 12. pp. 733–734.

Since 1915 the author has been studying the white mould of maize, which is widespread in Bessarabia and in some parts of South Russia. In all samples in addition to *Oospora verticillioides* a bacterium resembling *B. lactis acidi* was found. It is, however, distinct from this and is named *Micrococcus zeae*. The organism is gram positive and a facultative aerobe. It is very resistant to desiccation and is carried by the insect *Opatrum intermedium*. It appears that *M. zeae* was always present in the diseased maize, while *O. verticillioides* was not found in a fairly large number of cases. This suggests that the former is the real cause of the disease. Guineapigs fed with this diseased maize invariably died in 5 to 7 days with Coli-typhoid symptoms. This, too, the author believes is due to *M. zeae*.

For the control of this disease of maize it is recommended to steep the maize seed in 4 per cent. formaldehyde, to use local maize varieties said to be resistant to the disease, and to destroy insect vectors.

A. D. B.

GUTHRIE (J. Birney). **Pellagra –Hydrochloric Acid in the Stomach Contents.**—*Amer. Jl. Trop. Med.* 1926. Sept. Vol. 6. No. 5. pp. 357–365. [11 refs.]

After a critical survey of the literature dealing with gastric acidity in pellagra the author proceeds to discuss his own series of cases, consisting of 35 female coloured pellagrins. The average age was 32·8 years and the average duration of treatment in hospital was 47·7 days.

In this series 5·8 per cent. had excessive or normal free HCl in the stomach, 31·4 per cent. were deficient in this respect and in 62·8 per cent. there was complete achlorhydria. In the author's table comparing his results with those of other workers the only remarkable difference is in the figure 5·8 per cent. for those with normal or excessive HCl. This is a very much lower reading than elsewhere recorded.

In 19 fatal cases one had normal or increased HCl, 3 were deficient and in 6 there was achlorhydria. The author judges from these results that the presence or absence of free HCl in the gastric contents of pellagrins is of no prognostic value. Nevertheless, he considers that a diminishing acid content is of bad import, while the converse is also true. In diagnosis achlorhydria is of some help and a normal HCl content in a doubtful case is somewhat against a diagnosis of pellagra.

Though diarrhoea itself lowers gastric acidity there were a number of cases in the series which had severe diarrhoea with HCl in the stomach. Out of 93 pellagrins, 76·3 per cent. had diarrhoea previous to admission or during their stay in hospital.

The author advises the giving of HCl as a therapeutic measure in those cases in which the administration does not cause pain.

A. D. B.

MACHWILADSE (Niko). [Material zum Studium der morphologischen Veranderungen des Blutes bei Pellagra. **Morphological Changes in the Blood in Pellagra.**] 123 pp. With 3 photos & 1 map appended. [In Georgian.] 1925. [Summarized in *Arch. f. Schiffs– u. Trop.–Hyg.* 1926. Nov. 1. Vol. 30. No. 11. pp. 708–710.]

Forty-six cases of pellagra occurring in Tiflis are made the subject of an exhaustive haematological study.

Thirty-nine of the cases were uncomplicated, while 6 had malaria and 1 phthisis. The blood examinations were made when the disease was at its height as evidenced by the presence of dermatitis, diarrhoea and dementia.

The results of the examinations may be given in brief as follows :—

1. *R.B.C's.*—Always reduced in number. Degree of anaemia not dependent upon length of illness, but upon severity.
2. *Haemoglobin.*—Diminished in 84 per cent. Normal in 16 per cent.
3. *Colour Index.*— 72 per cent. of cases greater than 1.
   25 per cent. normal.
   3 per cent. less than 1.
4. *W.B.C's.*— 64 per cent. less than normal.
   23 per cent. just below normal.
   13 per cent. normal.
5. *Platelets.*— 76 per cent. diminished.
   24 per cent. normal.

6. *Neutrophil count.*—
   (*a*) *Relative* 67 per cent. diminished.
   33 per cent. normal.
   (*b*) *Absolute* 92 per cent. diminished.
   8 per cent. normal.

7. *Lymphocytes.*—
   (*a*) *Relative* 72 per cent. increased.
   26 per cent. normal.
   2 per cent. diminished.
   (*b*) *Absolute* 67 per cent. normal
   28 per cent. diminished.
   5 per cent. increased (slight).

8. *Eosinophils* mostly normal, when anaemia is very profound a complete absence. Increased only when intestinal parasites are present.
9. *Basophils.*—Normal. 7 per cent. of cases show slight increase.
10. "*Monocytes.*"— 5 per cent. normal.
   13 per cent. slight increase.
   2 per cent. diminished.
11. The *Arneth Count* shows a movement to the left in 95 per cent. of cases.
12. The R.B.C.'s stain well, megalocytes occur sometimes. Polychromatophilia—rare.

From these findings, amongst others, the author concludes that a toxin is present in pellagra acting upon the blood forming organs.

A. D. B.

Ballif (L.), Rennescu (N.) & Reznic (A.). Contribution à l'étude du sang dans la pellagre. **Study of the Blood in Pellagra.**—*C. R. Soc. Biol.* 1926. Dec. 31. Vol 95. No. 38. pp. 1565–1567. [1 ref.]

Observations upon the blood in pellagra were made at the Socola Hospital (Rumania). The total albumen in the serum was determined in 60 cases (40 men and 20 women). The general average was 7·3 per cent., the normal being 7 per cent. Many cases showed a subnormal figure and others were much above the average.

A normal viscosity was found in 27 cases. In 4 it was slightly diminished and in 3 slightly increased.

The ratio between globulin and albumen was found to be normal in 14 cases only, being diminished in 7 cases and increased in 13. It is to be remarked, that the normal ratio $\frac{\text{globulin}}{\text{albumen}}$ is $\frac{20}{80}$ - $\frac{40}{60}$. In some cases these figures were inverted, $\frac{62}{38}$ in one case.

In serious cases the greatest modifications were found. Side by side with the diminution of albumen in the serum there was an increase in the chlorides and urea. As the case improved the chlorides and urea returned to normal, followed much later by the albumen. In severe chronic cases the albumen content was normal or increased and the chlorides normal.

Work is quoted to show that globulin increase in the serum is an expression of a metabolic imbalance or possibly of an endocrine imbalance. The authors are of the opinion that the variation in pellagra

between globulin and albumen in the serum, together with the increase of chlorides and urea in the blood, are the result of tissue destruction and general intoxication.

A. D. B.

Mouriquand (Georges). Les diéto-toxiques. [**Diet-Toxins.**]—*Presse Méd.* 1926. May 1. Vol. 34. No. 35. p. 545.

Since 1913 the author has been engaged in researches upon diet deficiency and its results. In the course of this work he has recorded the following curious experiments:—1. Working with Weill, it was found that feeding guineapigs upon whole barley resulted in typical scurvy. If the same barley was allowed to germinate and the animals were fed exclusively on the resulting growth, sudden death occurred or an illness which was manifested by convulsions or diarrhoea, ending fatally on the third to sixth day. It is obvious, therefore, that both of these diets are harmful. Now if the animals are fed upon both the above diets at the same time no ill results took place and normal growth was obtained.

2. Working with Michel the author fed guineapigs upon a diet partially deficient in vitamin C, but otherwise well balanced (barley, hay and sterilized lemon juice). The animals began to show signs of scurvy about the 80th day. Incidentally, it should be mentioned that the hay was found by control experiments to have no antiscorbutic power. Extraordinary to relate, omitting the hay from the diet caused scurvy to appear much earlier, i.e., on the 30th to 35th day. More extraordinary still, the readmission of hay to the diet cured the disease.

3. Guineapigs fed upon maize, hay and raw lemon juice remained normal. Subtract the hay from the diet and on about the 20th day the hair begins to fall off from half to three-quarters of the skin surface. This does not occur when barley is used in place of maize. In other words, the toxicity of maize only shows itself in the presence of an unbalanced diet. Restore the diet to its original equilibrium and the loss of hair ceases in less than 20 days. A similar phenomenon is said to be present in those pellagra cases where maize is supposed to be the cause of the disease.

4. The author, with Michel, has shown that if cod-liver oil be added to the balanced diet of guineapigs no trouble results, but if the diet is then rendered deficient grave bony changes occur, i.e., spontaneous fractures, haemorrhages, etc. Recovery was obtained by returning to the balanced diet still including the cod-liver oil. It was shown that the unbalanced diet by itself did not cause the osseous changes; therefore it would seem that cod-liver oil in the presence of an unbalanced diet becomes possessed of a powerful osteo-dystrophic power.

From a consideration of these remarkable findings it appears that certain substances, alimentary or otherwise, without toxicity under normal dietetic conditions, reveal their latent toxicity when the diet becomes deficient or ill balanced. They are not "true toxins" but "conditional toxins." To these the author gives the name "dieto-toxins."

[After this work has received confirmation, it should throw much light on the connexion of these toxins with such a disease as pellagra.]

A. D. B.

Volpino (G.) La Pellagra ed il Maidismo. A proposito delle vedute del Prof. Mouriquand. [**Pellagra and Maize. On the Views of Professor Mouriquand.**]—*Riforma Med.* 1926. June 14. Vol. 42. No. 24. pp. 565–566; also in *Ann. d'Igiene.* 1926. June. Vol. 36. No. 6. pp. 462–465.

Pellagra is regarded as an intoxication, due to or aided by the production in the body of a special hypersensitiveness to maize. This is shown by the fact, that when pellagrins are inoculated with a small quantity of maize-extract, there results a reaction evidenced by fever, somnolence and perhaps delirium. This is not seen in pellagrins who have recovered and, if found in healthy subjects, the reaction is but slight and in no way comparable with that referred to above.

Again, in the serum of pellagrins ferments from disintegration of maize are said to be present and such serum is found to be toxic to guineapigs deprived of maize. But maize does not contain poisons in the strict sense, because when taken with other food, maize is harmless. Further, the condition produced is not a real anaphylaxis; there is, it is true, a "change of reactivity," but no explosive anaphylactic shock. The condition thus holds a position intermediate between toxicity on the one hand and alimentary anaphylaxis on the other—there is no proof of deficiency or avitaminosis, nor of a true special toxicity, but there are indications of sensitization.

The author fed guineapigs on maize exclusively for several days; after this, to some was given, in addition, the husk of the maize, to others a lipoid extract, to a third group the maize alone. The first 2 showed the "typical signs" early and in a marked degree and died much sooner than the third group. To prove that the bran and the extract were not themselves toxic, one of these was given together with green food to each of 2 more groups; both remained well and thrived.

As regards Mouriquand's theory of diet-toxicity, it is stated, in connexion with the above, that barley is a scurvy-producing food and barley-grass toxic, but the 2 together are wholesome; also cod-liver oil is well borne by guineapigs with a balanced diet, but with a badly-balanced diet becomes toxic and leads to haemorrhages and dystrophy of bone. By itself, it has no such effect. Mouriquand, on the contrary, maintains that an ill-balanced diet may render manifest the toxicity latent in certain substances, to which a properly balanced diet acts as an antidote.

H. Harold Scott.

YAWS AND SYPHILIS.

Lopez-Rizal (Leoncio), Gutierrez (Perfectuo) & Fernandez (Lorenzo). **A Field Experiment in the Control of Yaws.**—*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 431–441. With 1 text fig. [3 refs.]

For the purpose of investigating the feasibility of carrying out an anti-yaws campaign, a dispensary was opened in 1921 at the town of Parañaque, where some 24 per 1,000 of the population were affected. The town lies about 6 kilometres from Manila where, however, yaws is rare, although the conditions in the two places are similar, a point which remains unexplained. At a house to house canvass and in the three subsequent months it was considered that all the cases (a total of 244) of yaws had been brought under treatment, but new cases continued to turn up and it was found unwise to close the dispensary for a number of months each year as it had been hoped to do. In the three years to October, 1924, 1,151 cases (552 primary and secondary : 599 tertiary) of residents and 1,392 (630 primary and secondary : 762 tertiary) of non-residents were treated ; the commonest tertiary lesions being keratosis palmaris et plantaris, and bone changes. Treatment was by means of neosalvarsan 0·01 gm. per kilo body weight, 1, 2 and in a few 3 injections being given, but in a group of 319 cases followed up [the actual period is not stated] 94·35 per cent. are stated to have recovered [presumably clinical cure.]

From April to July 31, 1925, 34 new cases were treated ; this, in spite of the fact, that six months previously no cases were known to exist in the town—a point worthy of note in connexion with anti-yaws work. The authors emphasize the necessity for intensive treatment and persistent vigilance, and deprecate the intermittent operation of yaws dispensaries. In 1923–24 a total of 31,040 cases of yaws has been treated in the various provinces of the Philippines.

H. S. Stannus.

Navarro (Regino J.). **A Serological Estimate of the Efficacy of Neosalvarsan in the Treatment of Yaws in a Field Dispensary.** —*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 445–452. [2 refs.]

Wassermann reactions were carried out in 101 cases in the granulomatous stage from among those dealt with in the previous paper, 3 months to 3½ years after the cessation of treatment by neosalvarsan. The reaction is presumed to have been positive before treatment of the 101 patients. 82 per cent. gave a negative reaction, of whom 51 per cent. had only received a single injection. 55 of the 101 only received 1 injection ; of these 43 were negative. Of the 18 patients giving a positive W.R., 7 showed clinical manifestations of yaws. In this connexion, the author refers to Goodpasture and de Leon, who found " that in patients under treatment with neosalvarsan, the Wassermann reaction did not disappear coincidently with the healing of the skin lesions . . . after the cessation of treatment the reaction gradually weakened and eventually became negative."

H. S. S.

Lacy (George Rufus) & Sellards (Andrew Watson). **Investigation of Immunity in Yaws.**—*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 453–462. With 4 figs. on 1 plate. [3 refs.]

The authors give the following summary :—

"Four yaws patients were treated with neosalvarsan and, after an interval of about six months, they were inoculated with yaws. One developed a characteristic granuloma, and the others showed atypical results. Treatment with neosalvarsan was repeated in two of these cases and in the other two the lesions soon disappeared spontaneously. After more than two years these four patients were found to be free from any clinical signs or symptoms of yaws and the Wassermann reaction was negative. They were then reinoculated with yaws, and only one developed a typical granuloma, the same one who was susceptible in the previous test. At the time of the first course of treatment with neosalvarsan this patient had had yaws for only three months ; the others had been infected for much longer periods. Therefore, three of these four patients showed well-marked resistance to reinfection with yaws. This resistance to reinfection might be explained either by the development of an active immunity or by the continuance of a latent infection with yaws. In the absence of information permitting a final decision, we have adopted as a working basis the view that active immunity develops late in the secondary stage of yaws.

"It is of considerable practical significance that yaws patients, treated in the advanced secondary stage of infection, have remained in excellent health, free from any symptoms of yaws, and that they retained well-marked resistance to reinfection for more than two years. This period of time is ample to permit bringing the disease under control even in heavily infected districts."

It should be added that of the four cases reinoculated with yaws a second time on October 1, 1924, and who then all showed negative W.R. three, namely the case which became infected (November 29, 1924), a case which showed no lesion (April 30, 1925), a case with abortive atypical reaction (April 30, 1925) gave positive W.R.s on dates as above while the fourth case with similar reactions to the third was negative (June 30, 1925).

H. S. S.

Sellards (Andrew Watson), Lacy (George Rufus) & Schöbl (Otto). **Superinfection in Yaws.**—*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 463–474. With 22 figs. on 6 plates. [14 refs.]

The authors set out to contrive a series of experiments to demonstrate whether superinfection in yaws is possible or not, and find that their results demonstrate a difference in this respect between yaws and syphilis. They quote Neisser, who states, "that if a normal person were to be inoculated with syphilis every day, say, for one month, the first 10 or 15 inoculations would give rise to entirely typical primary chancres, but the subsequent inoculations would produce only abortive atypical reactions, or might even give entirely negative results" -in other words, superinfection in syphilis can not be effected. The same has been found true by previous authors in regard to yaws except Charlouis, whose experiments are not, however, altogether free from challenge.

Sellards and his colleagues in their experiments produced yaws by inoculation in six volunteers, who had never lived in a yaws district, in whom there was no suspicion of syphilis and whose W.R.s were negative. They were all -cases A to F - inoculated on January 17th,

1925, with the production of a primary yaw yielding treponemata in $3\frac{1}{2}$, $3\frac{1}{2}$, 4, 4 and 4 weeks respectively; F giving an atypical reaction. In the following table, condensed from the tables given in the paper, these points will be seen.

(1) Case No.	(2) Interval in weeks between first inoculation and formation of primary yaw.	(3) Interval between first and second inoculations.	(4) Interval between first and second inoculation and formation of primary yaw.	(5) Interval between first inoculation and formation of primary yaw of superinfecting inoculation.	(6) Interval between first inoculation and appearance of secondary lesion.	(7) Character of lesion after reinoculation on same arm as first inoculation.	(8) Character of lesion after reinoculation on opposite arm.
A ...	3·5	4	3·5	7·5	10	Granuloma coalescing with primary yaw of first inoculation granuloma	small granuloma
B ...	3·5	4	3·5	7·5	10	small papule	small papule
C ...	4	5	6	11	11	small papule	minute granuloma
D ...	4	5	4·5	9·5	10·5	as in A	typical small granuloma
E ...	4	6	5	11	10·5	cluster papules	typical granuloma
F ...	4	6			15·5	negative	negative

The incubation period was thus 3½–4 weeks up to the time of the formation of a lesion, which could be called a typical primary yaw, though slight changes in the healed skin were manifest from the 10th day onwards, except in case F in which regression took place. Following reinoculation, at intervals shown in table, the first 5 patients developed clinical manifestations identical with those produced by the first inoculation. In 4 of the 5 these appeared in 4–7 days (in 1st inoculation only after 10 days) with the formation of granulomata or papules in due course. In the reinoculations, 2 incisions were made in each case, 1 on the same arm near the primary yaw of the original inoculation, the other on the opposite arm; the results at the time that treatment was begun are shown in the table. In the sixth case, in which for a short time after the first inoculation, a small nodule could be felt, 4 weeks later complete regression had taken place. Reinoculation gave entirely negative result, but 11 weeks after inoculation the W.R. was $-+$ and superficial lymph glands were enlarged and there had appeared macular lesions on the palms and small papules on the hairy part of the neck, containing treponemata. All the cases except F developed typical secondary lesions distribution not mentioned]; they differed in no way from the primary lesions. The number of weeks elapsing between 1st inoculation and development of secondary rash is shown in column (6) of table. This may be compared with column (5), which gives the number of weeks elapsing between 1st inoculation and development of reinoculation primary yaw. The author believes that these results show that, "in contrast to syphilis, superinfection in yaws is possible, even after the typical primary granuloma has developed." Further experimental work would appear necessary before this point may be looked upon as established. Much depends on the definition of superinfection, and the difference in the reaction in syphilis and yaws may be one rather of degree than of kind. A point that has also to be remembered is, that probably as in syphilis, trauma may determine the appearance of a lesion. In these cases, the reinoculation might merely have the effect of determining the appearance of a secondary yaw at the point injected.]

Other points of interest in the paper include observations on the W.R. in these cases. In 8 weeks after inoculation it was moderately positive, the titre thereafter increasing rapidly. Adenitis was present in all 6 cases studied, the axillary glands of the inoculated arm becoming palpable in 6–7 weeks; subsequently many other superficial groups of glands became affected, more extensively than ordinarily found in syphilis. These subsided slowly under treatment. No rise of temperature was seen in any case. Case F is of interest in that generalized yaws appeared without a typical primary lesion having developed. This possibility is, one believes, well recognized, but not emphasized — "the tenor of the literature leaning towards the view that yaws, at least as it occurs spontaneously, is regularly initiated by the development of a primary lesion," according to the authors. Referring to the primary lesion, Sellards and his colleagues say, "such a granuloma bears no resemblance to the usual text-book description of the typical primary ulcer of yaws." This erroneous description of the primary lesion as an ulcer in certain text books has already been pointed out in these columns. The same is, of course, true of the primary lesion in syphilis, which, properly speaking, is a granuloma, may be so small as to miss being seen, may show an abrasion of surface or may have the appearance of an ulcer if grafted on to a chancroid or if secondarily infected.] H. S. S.

Schöbl (Otto), Sellards (Andrew Watson) & Lacy (George Rufus). **Some Protean Manifestations of the Skin Lesions of Yaws.**—*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 475–481. With 3 plates. [8 refs.]

In this paper are described more fully three atypical skin manifestations in yaws patients, who are the subjects referred to in previous papers. They are (1) a lichenoid eruption surrounding the point of inoculation or reinoculation, (2) a circular exfoliative maculo-squamous exanthem on the palms, (3) a keratoid exanthem of the trunk and extremities. The first occurred, either as the sole reaction to inoculation, as in two treated cases inoculated two years later and case F, or surrounding a primary yaw as in case D, and a treated case inoculated two years later. The second was observed in case F, and closely resembled the well known lesion due to syphilis, here excluded by the conditions of the experiment. Subsequently, among 33 naturally infected persons, two other similar cases were seen. The authors are apparently unfamiliar with this condition and speculate as to whether this lesion is later followed by the affection called "clavos"—"in some cases of which only greatly thickened layers of exfoliating epidermis are seen with no trace whatever of the original granulomata." They do not, it would seem, distinguish between keratosis palmaris, to describe the condition above mentioned, one which most tropical practitioners, conversant with yaws, would associate with the macular framboeside, and true clavus which as the authors say, meaning nail-hole, relates to the holes left by the shedding of hardened plugs resulting from dried up granulomata most commonly seen on the soles of the feet.]

The third condition to be described, keratoid exanthem of the trunk and extremities, is again one that those familiar with yaws will at once recognize when they look at the beautiful photograph reproduced. To quote the author's description—

"The lesions were circinate, varying in diameter from 1 to 3 centimetres, and they were slightly hyperaemic at the margin. They were rough on palpation and were rendered prominent to the eye by the very distinct, white papillae that stood erect like goose flesh. This effect became more pronounced when a physiological goose flesh was induced by exposure of the patient's body to a cool breeze. The individual efflorescences of which such macular lesions are composed remind one of keratosis pilaris. As in keratosis pilaris, they are numerous and are small, conical, follicular papules of white colour located over the trunk and the extensor surfaces of the extremities. In the case under discussion there was no itching, but the depigmentation of the entire area, which involved the hair of the skin, was much more pronounced than in keratosis pilaris. There was no desquamation and the lesions were not diffuse, but were arranged in multiple, distinct, sharply outlined patches."

[The authors then go on to quote conditions described by Schüffner in Sumatra, Baermann and Gutierrez and believe that they are identical with that produced experimentally, but this is doubtful as certainly one of the affections mentioned by the last writer was the condition first described by Ziemann under "Melung" and referred to the macular depigmented exanthem commonly limited to the hands, wrists, feet and ankles. The various skin manifestations of yaws are, it is true, not yet definitely recognized, but most people will hardly agree with the authors who in their enthusiasm state at the end of their paper that "The skin manifestations of *T. pertenue* are almost as varied as are those produced by *T. pallidum*." Further, they would

appear to suggest that the processes underlying the several types of skin lesion in yaws are different in nature, an hypothesis which only histopathological study will decide.]

H. S. S.

Keratoid exanthem of trunk and extremities occurring in a Yaws patient.

[Reproduced from the *Philippine Journal of Science.*]

Schöbl (Otto) & Ramirez (José). **The Globulin Precipitation Reaction in Yaws. Its Independence of the Wassermann Reaction and its Behavior during the Course and Treatment of the Disease.** —*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 483–496. [8 refs.]

While carrying out investigations with this test among lepers it was noted that a very marked reaction took place in a patient who had had yaws. The authors therefore decided to try out the test in 24 cases of pure yaws at the same time the W.R.'s were done. As in leprosy, there was reason to believe that this non-specific serological reaction did not run parallel with the W.R. The author's conclusions are as follows :—

"1. The globulin precipitation test with distilled water was found positive in at least a 1 : 3 dilution in every one of the 24 active yaws patients examined. In certain cases the reaction was very strong, inasmuch as precipitation occurred in as low a dilution as 1 : 1.

"2. Healed cases of yaws showed less-pronounced precipitation than did the active cases, but a good many still gave positive reactions.

"3. Both qualitatively and quantitatively the results of this test and of the Wassermann reaction did not always agree.

"4. Experimental evidence is produced that the globulin of the patient's serum which precipitates upon dilution with distilled water is not the carrier of the Wassermann antibody.

"5. The globulin precipitation reaction with distilled water becomes positive shortly after the infection with *Treponema pertenue* sets in and is pronounced in the "pre-Wassermann" stage. It maintains its strength throughout the course of the disease and is still positive long after the Wassermann reaction becomes negative through specific treatment. As a prodromal and anamnestic reaction in yaws the globulin precipitation reaction is more sensitive than is the Wassermann reaction.

"6. The practical value of the globulin precipitation reaction as a confirmatory test of clinical diagnosis of yaws in the pre-Wassermann stage and as a useful reaction for the guidance of the extent of specific treatment necessary in a given case of yaws is strongly indicated.

"7. Due to the simplicity of technic, the reaction under discussion may prove to be of value in anti-yaws campaigns in locations where conditions make the carrying out of the Wassermann reaction impracticable."

H. S. S.

Lopez-Rizal (Leoncio) & Sellards (Andrew Watson). **A Clinical Modification of Yaws observed in Patients living in Mountainous Districts.**—*Philippine Jl. Sci.* 1926. Aug. Vol. 30. No. 4. pp. 497–507. With 9 figs. on 2 plates. [8 refs.]

In this paper the authors describe as "a modification of yaws" among the Malay population at Ifugoa, in the mountains of northern Luzon in the Philippines, a condition wherein the patients showed lesions resembling syphilitic condylomata of the muco-cutaneous junctures around the mouth, the nose, the anus and the genitalia to the exclusion of more generalized eruptions; only 5 of 33 cases examined "showed any evidence of metastatic involvement of the skin in areas more or less remote from the muco-cutaneous lesions." One had a few papules on the bridge of the nose; a second, granulomata in one axilla; a third, macular lesions on the palms; a fourth, papules over the eyebrow and on the scalp; a fifth, two granulomata on one forearm, one on the shoulder and several on the palms.

With this tendency to limitation of skin lesions there is, however, no restriction of enlargement of lymphatic glands. This limitation of the eruption is believed to be owing to the cooler climate due to elevation.

[Similar cases have previously been reported by SELLARDS and noticed in this *Bulletin*, but the hypothesis now put forward, that "a special strain of yaws of low dermatropic affinity has developed in these tribes in Ifugao, cut off for centuries from communication with the outside world," seems unnecessary, and, as he says, "at present there is no evidence to support such a supposition." The authors go on to remark: "We have not yet been able to perform the obvious and apparently simple experiment of inducing some of these patients in the early stage of the disease to leave the mountains and live for a few weeks in the lowlands."

Various observers are quoted as having demonstrated that yaws occurs among populations living up to altitudes of 5,000 ft, but no mention is made of the observations of RAMSAY in Assam (this *Bulletin*, Vol. 23, p. 8), who demonstrated that the hill dwellers who showed similar restricted exanthem in higher altitudes developed florid yaws when they came down to the plain.]

H. S. S.

JOLLY (G. G.). **The Occurrence and Distribution of Yaws in Burma.** —*Indian Med. Gaz.* 1926. Dec. Vol. 61. No. 12. pp. 581–585. With 1 map. [10 refs.]

Major Jolly in the present article has collected together all the information available as to the distribution of yaws in Burma. He shows that present knowledge of the disease in that country "is very sketchy and needs much amplification," and anything like systematic treatment has not been begun. He believes that yaws must have existed in Burma probably for centuries. With regard to the local name of the disease, he says that the word *buena* mentioned by CASTELLANI really indicates ringworm, and that in parts of Burma where the disease is in evidence the word used is *kwe-na* and *kwe-yoga* (Upper Burma). In Lower Burma the common name is *toungoo-na* and among the Salon tribe *paw-la-ai*. The author also makes an interesting allusion to the word yaws.

"There is in what is now the Pakokku district, a tract of land known as the 'Yaw' country, which in the time of the Burmese kings was ruled by a 'Wun' and known as the Wunship of Yaw-Le-Myo. It is bounded on the north by the Gangaw township of the Lower Chindwin, and on the west by the Chin Hills, both districts in which we know yaws to be very common. The Yaw country was and is inhabited by a people known as 'Yaws,' supposed to be descended originally from the Shans who founded the kingdom of Assam, and although it is probably a coincidence, one wonders whether there could possibly be any historical connection between the name 'Yaws' by which the disease is usually known in the British Colonies, and this district of 'Yaw' near the heart of Burma's principal endemic area, in which the disease still persists."

H. S. S.

MOUCHET (R.). **Yaws and Syphilis among Natives in the Belgian Congo.**—*Kenya Med. Jl.* 1926. Dec. Vol. 3. No. 9. pp. 242–245.

An article in general terms containing nothing new, except the suggestion that cases of juxta-articular nodules reported from Morocco

and Algeria are in reality due to yaws imported by Senegalese troops. [All the evidence given by writers from North Africa is against this supposition, which would also not account for cases occurring in Europe.]

H. S. S.

Goodman (Herman). **Frambesia Tropica and Syphilis.**—*Porto Rico Health Review.* 1926. Vol. 1. p. 3. [Abstract in *Amer. Jl. Syph.* 1926. Oct. Vol. 10. No. 4. pp. 646–647.]

After referring to the theories which have been put forward to explain the different geographical distribution of yaws and syphilis and at the same time their possible relationship to each other, the author suggests that the cross immunization obtained with the two diseases using monkeys for the experiments gives presumptive proof that the specific organisms of yaws and syphilis are not identical to-day.

H. S. S.

Jahnel (Franz) & Lange (Johannes). Zur Kenntnis der Framboesie-Immunität der Paralytiker. [**Immunity of the General Paralytic to Yaws.**]—*Klin. Woch.* 1926. Nov. 5. Vol. 5. No. 45. pp. 2118–2119. [4 refs.]

Following on their previous experiments in which they failed to infect general paralytics with yaws using a strain carried in rabbits supplied by Nichols, the authors repeated their experiments, using a second strain placed at their disposal by Dr. Louise Pearce of the New York Rockefeller Institute, a strain of central American origin, obtained from a negro woman patient of Dr. Howard Fox, of which the reactions in rabbits had been studied by Pearce and Brown.

Eight cases of G.P.I. proved refractory to this strain of yaws virus (known as Y^2) with a similar result in a single case of tabes. In a case of cerebral syphilis an uncharacteristic lesion developed at the site of inoculation, which retrogressed and failed to yield spirochaetes, a result which must be considered negative. The objection that might be made against these experiments, namely, that long passage through rabbits might have diminished the pathogenicity of the strain for other animals, including man, is met by the fact that the first strain not kept in rabbits was also noninfective for G.P.I. cases. In cases of disseminated sclerosis used as non-syphilitic controls infection was easily effected by skin scarification method, but the induced disease had no therapeutic effect on the nervous lesions. The non-infectability of cases of G.P.I. by yaws virus must be considered as an immunity phenomenon.

Similar results have since been obtained by the use of a third strain of East Indian origin.

H. S. S.

Sabrazès (J.). Le spirochète du pian (*Spirochaeta pertenuis*) ; sa coloration. [**Staining the Yaws Spirochaete.**]—*C. R. Acad. Sci.* 1927. Jan. 4. Vol. 184. No. 1. pp. 47–48. With 1 text fig. [1 ref.]

The author reports his observations on methods of staining *Spirochaeta pertenuis* obtained from two cases of yaws. No staining was

obtained with methylene and carbol toluidine blue, but by Ziehl-Neelsen method good results were produced, and by this method together with the procedure of Fontana–Tribondeau still better.

H. S. S.

McNaughton (J. G.). **The Relation of Goundou and Yaws.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Nov. 25. Vol. 20. No. 4. p. 310.

The author gives a brief note of a second case of goundou following closely on yaws met with in the anti-yaws campaign in East Africa. A boy, aged 10 years, had typical paranasal swellings. He suffered from yaws, untreated, two years ago, the swellings appearing a year later. Neither he nor his father and brother, who both had yaws, showed any manifestations of syphilis.

H. S. S.

Moore (G. D. Fitzgerald). **Case of Goundou.**—*Nigeria Ann. Med. & San. Rep.* 1925. Appendix D. p. 58. With 1 fig.

Dr. Moore puts on record a typical case of goundou occurring in a boy [aged 7 years judging from the photograph], who at the same time showed "sabre tibiae," serpiginous yaws ulceration and nodes and complained of nocturnal bone pain. The paranasal tumours were removed by operation and the general condition improved after a long course of salvarsan.

H. S. S.

Armstrong (John S.). **Notes on the Treatment of Yaws (Framboesia Tropica) in Western Samoa.**—*Mandated Territory of Western Samoa. Ann. Rep. Dept. of Health for the Year ended 31st March, 1926.* Appendix B. pp. 17–19. [2 refs.]

The anti-yaws campaign started in 1923 in Western Samoa, entailing the administration of three injections of N.A.B. at weekly intervals to the whole yaws-sick population each year by medical units which visit all the villages in each district, was continued during the past year, and the results are here reported. One district was selected as a control district in which details of all cases were kept, thus serving as a basis upon which results in other districts might be integrated and going to show whether those results were such as might have been anticipated. [A very important point worthy of adoption in all native countries where similar campaigns are being conducted.]

The total numbers of injections given in the three years 1923-24-25 were 36,304 17,282 11,500, and it is stated that 61 per cent. of the population of 35,000 in Western Samoa has been treated. Other figures show the interesting result that in the 2nd year there were 3,695 fresh cases and 2,066 relapse cases, in the 3rd year there were 1,878 fresh cases and 1,955 relapse cases. The large number of relapses is stated to be accounted for by the fact that many in the first year did not receive a full 3 doses and others only smaller doses on account of the presence of some intercurrent disease. No children under six months old showed yaws lesions, but none by the age of 24 months was free.

The author is one of those who believe that one attack of yaws confers immunity against any subsequent attack of yaws or syphilis, and thinks that the treatment being given in no way disturbs such immunity,

but that it is likely to do so if treatment be given to children with the primary lesion before the body has had time to develop its natural immunity. These are interesting speculations, which may or may not receive support during the next ten years.] No case of a primary sore or generalized eruption was seen in a Samoan over 10 years of age, except in the case of nursing mothers, who sometimes showed an ulceration about the nipple, which the author regards as "a purely local infection of the tissue due to frequent massive infection of a wound with organisms from the lesion of the baby."

H. S. S.

Moss (W. L.). **Yaws. Results of Neosalvarsan Therapy after Five Years.**—*Ann. Trop. Med. & Parasit.* 1926. Dec. 17. Vol. 20. No. 4. pp. 365–384.

In 1920 the author together with SELLARDS and BIGELOW visited Santo Domingo as a commission to study yaws; the results of their observations were published in the *Johns Hopkins Hospital Bull.*, 1922 [see this *Bulletin*, Vol. 20, p. 172]. In 1925 he revisited the country to observe the results of treatment given on the former visit. Of the 1,046 cases studied on that occasion the author had the opportunity of making further observations in 1925 on 419. Among these were 276 cases on whom observations had been made in 1920 subsequent to treatment; 33 per cent. then were noted as clinical cures, and 67 per cent. uncured. In 1925, of the whole series of 419, 46·5 per cent. remained uncured five years after treatment, and 53·5 per cent. had remained free of signs of yaws during the five years.

The paper is a long one, with many tables analysing a mass of figures which it is impossible to summarize, and should be read by those interested in the subject. The following points may be noted, however. Results suggest that about 50 per cent. of a miscellaneous series of yaws cases in various stages may be cured by a single injection of neosalvarsan (0·6 gm.), that the percentage of cures is not much increased by two injections, but is consideably increased by three injections. The W.R. in 1925 on 73 cases treated in 1920 gave a positive result in 29, doubtful in 11, and negative in 33. The earlier the stage of the disease the more amenable it is to treatment. An interesting table is given in support of the view held as to the sequence in development of the various lesions in yaws:—

	No. of cases.	Average age.	Average duration.
Primary lesion	15	6·6 years	2·3 months
Early florid secondary eruption	82	8·8 ,,	12·3 ,,
Sparse recurring late secondary lesions	60	9·3 ,,	29·6 ,,
Late lesions on soles	327	21·6 ,,	9 years
Quiescent stage	127	23·8 ,,	9·7 ,,
Palmar lesions	5	25 ,,	14 ,,
"Studded lesions"	37	28·8 ,,	13·5 ,,
Gummata tertiary state ...	67	29·3 ,,	16·3 ,,

H. S. S.

Rebuffat (E.). Le dermatol dans le traitement du pian. [**Dermatol in the Treatment of Yaws.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. July. Vol. 6. No. 2. pp. 213–218.

This author, employing 3 cc. of a 10 per cent. oily suspension of dermatol intramuscularly twice weekly in the treatment of yaws and syphilis among natives at the hospital of Coquilhatville, while confirming the therapeutic efficacy of this remedy, points out very clearly the dangers of bismuth medication among native patients. He finds that 10 injections form the best course for treatment, but that this total is very frequently followed by stomatitis and albuminuria with cachexia and death in a certain proportion. He believes, and it is an interesting point, that the drug acts primarily on the kidney, and then only on a damaged kidney, pointing out that a third of all native patients show an albuminuria, the stomatitis being secondary to the damaged kidney and due to a fuso-spirillar infection.

H. S. S.

Leach (Herbert). **Note on the Use of Bismuth Metal in Isotonic Glucose Solution as compared with an Aqueous Solution of Bis. et Sod. Tart. in the Treatment of Yaws.**—*S. African Med. Rec.* 1926. Oct. 9. Vol. 24. No. 19. pp. 427–428.

The advantages of using the former preparation are, according to the author, working in Northern Rhodesia, no pain and no swelling and stomatitis rare. The disadvantages were difficulty with clogged needles, increased cost in the proportion of 3d. as compared with a farthing per dose, and slower action, a point of some consideration when dealing with the impatient native. In some cases the metallic preparation was given first, and Bis. et Sod. Tart. subsequently. It might have been to greater advantage to treat cases till clinical cure was established by the double salt, and then to give the metal, thereby establishing a depot for slow absorption.]

H. S. S.

Dixon (Patrick K.). **Some Toxic Effects of Sodium Bismuth Tartrate.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Nov. 25. Vol. 20. No. 4. pp. 305–306.

Of 90 intravenous injections given 38 caused no reaction, 21 slight reaction, 24 severe reaction, 7 very severe reaction. The author's conclusions are as follows: "Sodium bismuth tartrate may contain a toxic impurity. Elderly or delicate persons are more susceptible to this substance than are children and young adults. The toxic substance may be derived from the drug itself by oxidation or dissociation."

[This high proportion of toxic effects certainly calls for explanation, and in the text it is stated that a four ounce bottle was purchased locally (Katanga).]

H. S. S.

Dobell (Clifford). **A Note on the Generic Name of the Spirochaete of Syphilis** (*Treponema pallidum* **Schaudinn, 1905**). *Parasitology.* 1926. Dec. Vol. 18. No. 4. pp. 368–369. [9 refs.]

In Special Report No. 19 of the Medical Research Council Dobell produced the evidence then available to show that the "correct"

generic name for the causal organism of syphilis was *Spironema* Vuillemin, 1905. Dr. C. W. Stiles of Washington has, however, now pointed out "that the generic name spironema had already been introduced into botanical nomenclature for flowering plants—on at least three occasions prior to 1905." At the author's request Dr. Stiles supplied exact references, and these Dobell has now been able to verify. "The correct generic designation of the organism in question is *Treponema* Schaudinn, 1905," therefore taking priority over *Microspironema* Stiles and Pfender, 1905.

H. S. S.

Soeprapto. Prophylaxis der Dementia Paralytica. [**Prophylaxis of General Paralysis.**]—*Geneesk. Tijdschr. v. Nederl. Indië.* 1926. Vol. 66. No. 4. pp. 561–563.

The author briefly quotes four cases of general paralysis in natives, without giving argument for his diagnosis. Two cases were in Javanese women, who had been living in concubinage with Europeans; the other two concerned a Chinese merchant and a Javanese ex-soldier. In all these cases the patients had been in the habit of drinking alcohol, though nothing is said about the quantity taken. Soeprapto ventures to consider the neurotoxic influence of alcohol as one of the predisposing factors for general paralysis in syphilitics, together with other noxious influences of civilization and modern life. His recommendation "to sail around the cliffs of civilisation" constitutes a very vague guidance in the combating of this disease.

W. J. Bais.

Margeridon (Paul). La lutte antisyphilitique en Afrique équatoriale. [**The Antisyphilitic Campaign in Central Africa.**]—*Presse Méd.* 1926. Nov. 20. Vol. 34. No. 93. p. 1467.

The author during a journey from Cairo to the Cape remarked the "enormous frequence of syphilis" among the native populations of the Sudan, Uganda, Tanganyika Territory, Belgian Congo and Rhodesia. He refers to the skin and bone lesions as commonly seen in natives and lays stress on the fact, of course well known, that syphilis of the nervous system among natives is rare. He also believes that the hereditary disease takes a first place as a cause of syphilitic manifestations among natives and as a cause of abortion and infant mortality. With some of these opinions, he states, local medical men do not agree, and in this leading article no mention is made of the conditions under which his observations were made. It therefore rather remains as a general statement of opinion. In seeking for some explanation of the absence of nervous system syphilis he suggests, as others have done before him with really no reason, that malaria may be the determining factor.

H. S. S.

Céard (L.). Action locale du stovarsol dans un cas de syphilome phagédénique de la lèvre inférieure. [**Local Action of Stovarsol in a Case of Phagedaenic Syphiloma.**] *Arch. Inst. Pasteur d'Algérie.* 1926. June. Vol. 4. No. 2. pp. 340–342. With 1 plate.

The author describes the case of a native girl aged sixteen seen at Colomb-Bechar with a phagedenic ulcer of the lower lip which healed

under 14 daily local applications of a solution of stovarsol (1 gm. in 20 cc. distilled water), no other treatment being given. The lesion commenced 6 weeks before as the result of a scratch. In the absence of any history or sign of syphilis in the girl herself before the injury or in her family, a diagnosis of a primary chancre was made when the W.R. was found to be positive, though it is noted that two examinations failed to show treponemata in the lesion. The patient was delivered of a child a few weeks later having all the classical signs of hereditary syphilis. The author concludes by remarking on "this extremely easy and efficacious treatment." [One would like to know more of the after-history of this girl before joining in this eulogism.]

H. S. S.

Shaw (Violet A.). **Case of Gangosa.** *China Med. Jl.* 1926. Dec. Vol. 40. No. 12. pp. 1236–1237.

Miss Shaw reports the case of a boy aged 15 showing a lesion of the left nostril which was diagnosed as gangosa by Dr. Chang. The case is noticed as the first seen in Honan during 8 years' work. The history given shows that after a blow on the right side of the head there was bleeding from the left nostril and irritation which caused the boy to scratch the septum. Four months later the left nostril and septum were gone. Large glands were found at the angles of the jaws and in the axillae. "A direct smear showed numerous *Treponema pertenue*." Temperature 100 to 102° F. [No W.R. reported. There would appear to be some doubt whether this was a case of gangosa or whether actually *Treponema pallidum* was found.]

H. S. S.

Heimburger (L. F.). **Severe Bismuth Poisoning. A Case successfully treated with Sodium Thio-Sulphate.** —*China Med. Jl.* 1926. Sept. Vol. 40. No. 9. pp. 842–845.

A day after the last of four intramuscular injections each of 2 cc. of a 10 per cent. emulsion of bismuth salicylate in olive oil at 3-day intervals, the patient, a woman aged 26 infected from her husband, was admitted to hospital with marked bleeding from the mouth. Examination revealed the usual signs of severe bismuth stomatitis with petechiae scattered over thorax, abdomen and limbs. The urine contained albumin, epithelial and red blood cells in abundance the blood, nearly 4 million red cells with megalocytes and microcytes present: sputum bloody: W.R. ++++. Thiosulphate 1·2 gm. thrice daily by mouth for 3 days and 0·5, 0·75, 0·9, 1·0 gm. intravenously on successive days relieved the condition most successfully, although the anaemia became more marked at first. At discharge on the 18th day the urine was negative.

H. S. S.

Hermans (E. H.). Het verloop van de syphilis bij den Inlander. [**The Course of Syphilis in the Native.**] *Geneesk. Tijdschr. v. Nederl. Indië.* 1926. Vol. 66. No. 4. pp. 531–545. [20 refs.]

Tertiary yaws, which has been better recognized of late, has previously often been taken for tertiary syphilis, which error resulted in an apparent discordancy between the prevalence in the natives of tropical countries of primary and secondary syphilis on the one side and the tertiary stages

of this disease on the other. Syphilis in the native which happens to come under medical observation from the beginning, does not show much difference from that of the European, but for a greater inclination to localize in the skin. On the other hand, neuro-syphilis and parasyphilitic affections are comparatively rare in the native. The latter have even long been considered not to occur at all in tropical races, but apparently lately they are becoming more prevalent. Hereditary syphilis is also rare.

These differences are not to be ascribed to racial peculiarities, but to the fact that syphilis in the native so far has not been much interfered with by treatment, especially by the modern treatment with arsenical compounds. Such treatment drives the spirochaetae from the skin and mucous membranes, and causes them to seek a hiding place in the nervous system, which is less accessible for the chemicals. The increase of parasyphilis is considered by Hermans to be a sequel of modern treatment and an incitation to criticism of a too energetic treatment of the early symptoms of syphilis.

W. J. Bais.

Jeanselme (E.) & Eliascheff (O.). Examen histologique de deux nodosités juxta-articulaires. [**Histological Examination of Two Juxta-Articular Nodules.**] — *Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1926. Aug. 5. Year 42. 3rd Ser. Vol. 50. No. 28. pp. 1404–1406. [3 refs.]

In this article is described the histopathological picture found in sections of two nodules removed from two old persons living in France and suffering from chronic rheumatism, one of whom was apparently syphilitic. Information on the clinical side is wanting, though the lesions are apparently accepted definitely as cases of J.A.N. by Jeanselme. In the one case the node was composed of irregularly disposed bundles of fibrous tissue poorly vascularized and without any elastic fibres, enclosing a central area of necrosed amorphous tissue. A few polynuclear cells were noted and at the periphery of the amorphous zone large polygonal endothelial-like cells which were in reality swollen connective tissue cells enclosing numerous nuclei, but there was no lymphoid infiltration, no endarteritis and no thrombo-phlebitis. In the second case three zones were distinguished: an outer zone of young, in places richly vascularized, connective tissue, the medium sized vessels showing endothelial proliferation and thickened walls with some perivascular leucocytic infiltration, but no plasmocytes. In the middle zone was found rather denser connective tissue, fewer cellular collections, but the characteristic large swollen endothelioid cells were again seen. The innermost zone consisted of a homogeneous necrotic tissue showing vessels completely obliterated by endarterial proliferation.

No spirochaetes or other organisms were demonstrated.

H. S. S.

Jeanselme (E.) & Eliascheff (O.). Contribution à l'étude de la structure des nodosités juxta-articulaires. [**The Structure of J.A.N.**]—*Schweiz. Med. Woch.* 1927. Jan. 8. Vol. 57. No. 2. pp. 25–27. With 2 text figs.

After making some reference to cases of this condition occurring in persons in whom a history of yaws could be excluded and to the histological examination of a node by the authors removed from a case in Madagascar in which the changes were so far advanced as to

preclude any idea being formulated as to the origin of the nodule, they describe the pathological picture obtained in sections of a nodule removed from a woman of 80. The patient suffered from chronic rheumatism with marked deformity of the hands and subluxation of all the metacarpo-phalangeal joints. Nodules occurred about the elbow and knee having the characteristics of J.A.N. Yaws was excluded; syphilis might be suspected owing to an aortic murmur and a history of three abortions and death of one of six children at tender age (questionable evidence of syphilis). Microscopically the node was found to consist of fibrous tissue undergoing, as the inner zones were reached, necrotic change. About the borders of the necrotic zones pseudo-giant cells were noted, but no lymphoid cells were present. Nor was there any evidence that the process had origin about the blood vessels. There was no endarteritis nor thrombo-phlebitis, such as is seen in syphilitic lesions.

H. S. S.

Jessner (Max). Ueber syphilitische juxtaartikuläre Knotenbildungen. [**Syphilitic Juxta-Articular Nodules.**]—*Arch. f. Dermat. u. Syph.* 1926. Nov. 13. Vol. 152. No. 1. pp. 132–157. With 8 text figs. [Numerous refs.]

The author describes three cases of J.A.N. with syphilis, he believes, as the etiological factor and deals fully with the histological findings. He then refers to all the other published cases in which yaws can be excluded as a cause. He accepts 62 such cases; 20 from Europe and North America and 42 from North Africa. These cases are then analysed and very fully discussed.

In a number of cases other manifestations of syphilis have been found, including a tertiary syphilide, a marked secondary eruption, a tubero-serpiginous syphilide, a mixed secondary and tertiary lesion, papular exanthem, choroidoretinitis, gummatous ulcer of leg, leukoplakia of tongue, cardiac disease with cirrhosis of the liver, apoplexy. In others an associated arthritis has been considered to be syphilitic in origin. Among the author's own cases one had an ulcer on the thigh which cleared up under salvarsan, the second a dilatation of the aorta and the third an ulcer of the foot with gangrene which may have been caused by arterio-sclerosis or have been the result of an obliterating arteritis due to tobacco. The W.R. is positive in nearly all cases. Jessner in opposition to Sparacios believes that, judging by reports, treatment with antisyphilitic remedies is followed by diminution in size and disappearance of the nodules in the majority of cases, even in old cases, and quotes a third case in which the nodules had been present for 32 years.

The pathological changes described by many observers for their cases and those described by the author are very varied, there being no uniformity in the histological picture. Whether there is a definite sequence in changes according to the age of the lesion has not been determined. Further, there appear to be no definite differences in lesions due to syphilis and those due to yaws except possibly that degenerative changes are commoner in the former. Jessner states that both clinically and histologically the lesions in the syphilitic cases show considerable deviations from other specific lesions and believes that this accounts for their recognition being so long delayed. In his case a xanthomatous degeneration was noted. This appears

to be the first time cholesterin has been found in a syphilitic case, though well-known in cases of tropical J.A.N. The fact is recalled that MENDELSON in Siam has described chalky amyloid, and fatty degeneration in his cases, and denies a spirochaetal etiology, and that IWASAKI under the name Xanthoma tropicum regards J.A.N. as inflamed fibromata. While believing definitely that J.A.N. are manifestations associated with yaws or syphilis, Jessner finds that there is no way of distinguishing the two conditions. He thinks that the lower extremity is more commonly affected in yaws cases, the the upper in syphilitic cases. He also makes the interesting observation that though the lesions occur in syphilitics they may not be syphilitic in nature.

This is borne out to some extent by the unusual histological picture referred to above and by the infrequence of finding spirochaetes; on the other hand, this difficulty is met with also in many tertiary lesions of yaws and syphilis.

The author found no spirochaetes in his cases and rabbit inoculation proved negative. Regarding the differential diagnosis, mention must be made of the fibro-cartilaginous nodes, sometimes ossified, sometimes calcified, described by DEJERINE and CEILLIER as occurring in paralysed limbs. These non-tropical cases of J.A.N., if they be syphilitic in origin might well be designated fibroid gummata or syphilitic fibroma, terms already used by some authors. They would be considered rare manifestations of syphilis and DE QUERVAIN has postulated the possibility of a "fibrotropic" strain of spirochaete. It seems more likely, however, that the tendency to produce fibrous tissue is a reaction of the part of the body characteristic of certain persons or races, a kind of diathesis, and it seems certain that trauma plays no uncertain part in production and localization of the lesions.

[There is nothing essentially very new in this paper (all the cases mentioned have already been referred to in the *Bulletin*), but it is a valuable summary and discussion and is followed by an exhaustive bibliography.]

H. S. S.

WORSTER-DROUGHT (C.). **Subcutaneous Fibroid Syphilomata. A Rare Manifestation of Late Syphilis.** *Lancet.* 1926. Sept. 25. pp. 637–639. With 2 text figs. [19 refs.]

The author places on record a case of that rare but interesting condition to which PARKES WEBER called attention in 1920 under the name given above. The present case forms the sixth of the series to be reported, and of these previous cases Worster-Drought gives short summaries.

In the present case, a married woman aged 27, with a history suggesting inherited syphilis, but none to suggest the acquired disease, a series of hard subcutaneous nodules which appeared three months before, extend from just below the olecranon to a point three inches above the styloid process of the ulna. The nodules are bilaterally symmetrical and diminish progressively in size from above downwards varying from 2 cm. to a few millimetres in diameter; they are hard, adherent to the deeper tissues, but the skin is freely movable over them. They lie along the course of the ulna nerve and pressure upon them produces pain in the distribution of the nerve though the nodules themselves are insensible. Over the ulna area of each hand there is

some hyperalgesia to pinprick, but no other signs of nervous involvement.

X-ray examination revealed some periosteal nodes on each ulna, but not corresponding to the subcutaneous nodules. Wassermann reaction positive. Sections of an excised nodule proved it to be of the nature of a gumma—"masses of fibrous tissue separated by a looser tissue which is highly vascular. The vessels in this latter are surrounded by aggregations of inflammatory cells, chiefly small round cells. Some of the vessels show thickening of the intima with very little infiltration of the vessel wall; other vessels show thickening of the adventitial coat with marked infiltration by small round cells." [No examination for spirochaetes is mentioned.] Treatment by means of N.A.B., mercury and potassium iodide caused the entire disappearance of the lesions.

[This case is given in some detail as it would appear to be a most typical example of the condition which forms the heading of the paper, and which clinically may, I think, be distinguished from juxta-articular nodules as known to tropical practitioners. There are, however, many cases presenting features intermediate between these two well-marked groups which are very puzzling, but whose pathogeny will doubtless be settled as more and more of them are recorded with clinical and pathological findings.]

H. S. S.

Margeridon (Paul). Des nodosités juxta-articulaires; leur répartition en Afrique équatoriale. **Juxta-Articular Nodules; their Distribution in Equatorial Africa.**]—*Presse Méd.* 1926. Dec. 15. Vol. 34. No. 100. pp. 1579–1580. With 3 text figs. [2 refs.]

During a journey by motor car from Cairo to the Cape the author kept a look out for cases of this affection, and noted cases at Melut and Adok in the Sudan, at Lira in Uganda, at Tinde in Tanganyika Territory, at Kabalo in the Belgian Congo and at Bukama in the Katanga province. He quotes Marsault and Dupuis as stating that the condition is common in the Congo. The cases reported were typical, but no history is given for any of them.

H. S. S.

Mendoza (D.). El Bismuto en el tratamiento de la Buba.—*Rev. Med. y Cirug.* Caracas. 1926. May. Vol. 9. No. 98. pp. 92–96.

Winckel (Ch.). Progress achieved in combating the Framboesia Tropica.—*Indian Med. Rec.* 1926. Apr. Vol. 46. No. 4. p. 97.

GRANULOMA VENEREUM.

Fox (Howard). **Granuloma Inguinale: its Occurrence in the United States. A Report of Fifteen Cases observed in New York.** *Jl. Amer. Med. Assoc.* 1926. Nov. 27. Vol. 87. No. 22. pp. 1785–1789. [27 refs.]

A very interesting paper, dealing more particularly with 15 cases observed by the author, together with an analysis of 150 cases observed in U.S.A. collected from the literature (complete bibliography given). The numbers and relative distribution are probably no criterion of the

actual facts, as only reported cases are dealt with. The disease is widespread throughout the States and probably more common in the south than in the north and west. The average age (131 cases) was 30 years with limits at 15 and 60. The ratio of negro to white was 9 : 1. Duration (127 cases), 10 days to 26 years ; average, $3\frac{1}{4}$ years. Site was in every case in the neighbourhood of the genitalia, groin, 70 ; penis, 53 ; vulva, 44 ; perineum, 28 ; pubes, 22 ; scrotum, 21 ; anal region, 13 ; buttocks, 12 ; thighs, 10 ; scrotal thigh fold, 5 ; sacrum, 3. In 9, other areas were affected as well—cheek, neck, nose, throat, mouth, lip, pharynx and larynx, back of hand, thigh ; with microscopical examination and confirmation in 2 only. In 102 cases the W.R. was performed, 35 giving positive result and 67 negative. Donovan bodies were found in 11 of the 15 cases. The histopathological changes were studied by Alexander Fraser in 7 of the author's cases, and his description is as follows :—

" The histologic features of the lesions in all these cases are essentially the same, and one description can be made to apply to all.

" The general outstanding feature of the lesion is its markedly destructive character, the normal architecture of the skin and subcutis being extensively destroyed and replaced by new elements. In places the epiderm is absent and replaced by serum, fibrin and polymorphonuclear leukocytes with a variable number of lymphocytes, plasma cells and large mononuclears. This exudate extends for variable depths, sometimes for the whole depth, of the corium. In these ulcerative areas the tissue is edematous, the thin walled blood and lymph vessels are distended, and frequently ruptured, thus giving rise to irregularly shaped pools of blood and lymph. The preserved epiderm adjoining the ulcerated areas shows very marked regenerative hyperplasia, expressing itself in long downgrowths of the epithelial pegs. The immediately adjoining corium or subcutis shows a rather characteristic dense plasma cell infiltration, running through which can be seen a network of capillaries with very marked hyperplasia of the endothelium presenting the appearance of solid cords of large pale staining " epithelioid " cells. Extending from this zone, the proliferation of fibroblasts and the production of collagen dominate the picture, the collagen appearing frequently in large patches or strands, and extensively hyalinized. In the peripheral zone, too, the arteries and arterioles show marked thickening and rather peculiar changes. Many of them show moderate lymphocytic infiltration of the whole wall together with proliferation and adhesion of the endothelial cells frequently to the extent of obliteration. The musculature in many cases is replaced by dense hyalinized fibrous tissue.

" These changes vary in position and extent in different sections and in different cases but are present in essentially the same manner in all. The picture corresponds to that seen in granuloma inguinale, though it is not specific."

Treatment with tartar emetic was used, but reference is made to the use of antimony sodium thioglycollate and antimony thioglycollamide and Roentgen rays.

H. S. Stannus.

McIntosh (J. A.). **The Etiology of Granuloma Inguinale.**— *Jl. Amer. Med. Assoc.* 1926. Sept. 25. Vol. 87. No. 13. pp. 996–1001. With 8 text figs. [13 refs.]

To quote part of the author's own summary :—

" The study reported in this paper tends to prove that the Donovan body is the cause of granuloma inguinale by fulfilling the generally accepted criteria of specificity first stated by Koch. First, the organism was

demonstrated in the lesion in fourteen out of fifteen spontaneous cases. Second, it was obtained in pure culture in eight of these fifteen cases. Third, a tissue graft from a spontaneous case in which Donovan bodies were demonstrated and from which they were isolated in pure culture reproduced the disease in an individual not previously exposed in any way to the possibility of spontaneously contracting this disease. Fourth, pure culture of the Donovan body was again obtained from this experimental lesion. And, further, antibody production against the cultivated Donovan body was demonstrated by the presence of agglutinins, precipitins, globulin changes and skin sensitiveness in the spontaneous and experimental cases."

Further, it is noted that all the patients were negroes, 10 males, 5 females; the duration of the lesion ranged from 3 weeks to 13 years. The formol-gel test was positive in 14 of the 15 cases. For diagnostic purposes the swollen hyperplastic endothelium of the capillaries in zones in which there are numerous large swollen mononuclear cells filled with Donovan bodies forms a characteristic picture. Those interested in this subject should consult the original paper in which will be found full bacteriological and inoculation results.

H. S. S.

Johnston (Langloh P.). **Granuloma Tropicum.**—*Med. Jl. Australia*, 1926. July 24. 13th Year. Vol. 2. No. 4. p. 112. With 2 text figs.

The report of a man aged 21 years from Noumea with an 11 years' history of ulceration between the buttocks which, in spite of a triple positive Wassermann reaction, did not respond to anti-syphilitic treatment. 0·03 gm. of sod. ant. tartrate given intravenously, however, caused healing in a week. Four other injections completed the course, and the patient now suffers from anal stenosis. "Leishman-Donovan bodies" were not found, but no other pathological findings are mentioned.

H. S. S.

Shattuck (George C.), Little (Harold G.) & Coughlin (William F.). **Treatment of Inguinal Granuloma with Thioglycollates of Antimony.**—*Amer. Jl. Trop. Med.* 1926. Sept. Vol. 6. No. 5. pp. 307–317. With 3 text figs. [3 refs.]

Following along the lines advocated by Randall [this *Bulletin*, Vol. 22., p. 239], who used these preparations intravenously, the authors treated three cases of granuloma inguinale—the white wife of a negro and two negroes, the first with sodium antimony thioglycollate ("S.A.T.") intravenously followed by intravenous and intramuscular injections of the triamide of antimony thioglycollic acid ("T.A.T."); the second with intravenous T.A.T. and the third with intramuscular T.A.T. In the first 3·20 cc. of a ·4 per cent. solution was used with a total of 1·457 gm. T.A.T. and 22·4 gm. S.A.T. spread over 127 days. In the second a total of 0·976 gm. T.A.T. was given at 2 day intervals in doses of 8·30 cc. of 0·4 per cent solution in 36 days. In the third case 2·10 cc. were injected with a total of 0·476 gm. in 40 days when the lesions were healed. The authors speak highly of the results obtained.

H. S. S.

Kingsbury (Jerome) & Peck (Samuel M.). **Treatment of Phagedenic Ulcerations of the Genitals with Intravenous Administration of Antimony and Potassium Tartrate.**— *Jl. Amer. Med. Assoc.* 1926. Dec. 4. Vol. 87. No. 23. pp. 1900–1902. [7 refs.]

The authors while trying this drug in the treatment of granuloma inguinale extended their observations to cases of phagedenic ulceration of the genitals and give details of three such cases. They used a 1 per cent. solution commencing with a 3 cc. dose increased by 1 cc. at each injection up to 10 cc.; 3–4 injections weekly being given. As in granuloma inguinale treatment must be prolonged over the time of complete healing. The results thus obtained by intravenous injection were very good, while in their hands local applications of the drug met with poor success.

H. S. S.

CLIMATIC BUBO.

Todd (A. T.). **Poradenitis, or Subacute Lympho-granulomatosis.**— *Lancet.* 1926. Oct. 2. pp. 700–702. With 1 text fig. [6 refs.]

After some general remarks on the condition better known to tropical practitioners as climatic bubo, the pathological features are mentioned at some length, including the finding of the cell-inclusions described by other writers, and then the clinical notes of two cases which came under Dr. Todd's notice are given. The author accepts the cell-inclusions as parasites and believes that the diagnosis of the condition is easy by means of gland puncture and examination of smears made from the gland pulp, so removed, for these bodies, which he believes are found easily in all cases. He mentions treatment by emetine with or without iodine as specific, but appears to be unaware of the brilliant results obtained by protein shock therapy.

H. S. Stannus.

Verdelet & Aucké (J.). Notes sur deux cas de lymphogranulomatose de l'aine. [**Two Cases of Lymphogranuloma of the Groin.**]— *Jl. Méd. de Bordeaux.* 1926. Oct. 10. Vol. 103. No. 17. pp. 739–740.

The cases of two young men who had never been abroad, who each presented enlargement of inguinal lymph nodes preceded by a small penile lesion are here recorded. The lesion in the one case was a small ulcer at the frenum, in the second in the balano-preputial sulcus, neither having the character of a hard or soft chancre. In each case the homolateral iliac glands could be made out to be enlarged. The W.R. in each case was negative and blood examination showed a mild polynuclear leucocytosis. The affected glands were small in each case, but showed signs of softening. They were extirpated and the diagnosis rests upon the histological examination in each case [without any description being given]. Bacteriological examination [method employed not mentioned] was negative in one case, in the other staphylococci were found.

H. S. S.

Clément (Robert). L'étiologie du granulome vénérien; adénopathie inguinale subaiguë simple à suppuration intraganglionnaire. [**Climatic Bubo.**] *Presse Méd.* 1926. Nov. 13. Vol. 34. No. 91. pp. 1429–1431. [28 refs.]

After pointing out the differences of opinion held by various writers, due largely he believes to their ignoring one another's work, the author discusses the confused nomenclature in use and then passes on to a history of the diverse bacteriological findings by numerous observers, and a lengthy consideration of the etiological relation of Donovan bodies and the condition under review, which should be consulted by all interested in the subject.

[It only remains for the reviewer to point out how confusion is like to be worse confounded by the author's using the term "granulome vénérien" for the condition we know as climatic bubo in contradistinction to granuloma venereum.]

H. S. S.

TROPICAL MYCOLOGY.

MATTLET (G.). Mycoses dans l'Urundi. [**Mycoses in the Urundi District.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Apr. Vol. 6. No. 1. pp. 1–41. With 19 text figs. [9 refs.]

From the sputum of patients suffering from bronchial affections, fungi of the genera *Torula, Cryptococcus, Blastodendrion, Mycoderma,* and *Sterigmatocystis* were isolated. Treatment with potassium iodide and cacodylate of soda or novarsenobenzol resulted in notable improvement, but in some cases the fungus (Blastodendrion) persisted in the sputum after the condition had improved.

Species of Monilia and Blastodendrion were found to be present in association with various bacteria in an affection of the throat called by the natives " Kafindofindo ". This involves the base of the tongue and in benign cases occasions pain on deglutition, but in severe cases there are in addition violent pains in the neck and intense fever. It attacks both sexes and all ages, and severe cases are frequently fatal. Treatment consists in scraping the tongue and the application of glycerine and iodine or tincture of iodine.

Species of Willia, Monilia, Mycoderma, Blastodendrion and Cryptococcus were found in the faeces of patients with symptoms of true dysentery ; careful examination failed to reveal cysts of amoebae in the faeces. Treatment with potassium iodide with purgatives, intestinal disinfectants with laxatives, or intramuscular injections of emetine with small doses of alkaline purgatives, resulted in the progressive disappearance of the symptoms accompanied by a diminution in the number of parasites. *Willia bispora* was isolated from a tumour on the descending colon of a female who died after exhibiting dysenteric symptoms. Symptoms of enteritis were shown by patients from whose faeces species of Blastodendrion, Mycoderma, Willia and Monilia were obtained. Generally ten intramuscular injections of emetine, each of 5 centigrammes, accompanied by gentle laxatives cured the condition and caused the disappearance of the fungus. A Cryptococcus was found associated with bacteria in a vast ulceration of the jaw.

The morphological, cultural and biochemical characters of the various organisms are described. Owing to lack of animal material, inoculation experiments were not made.

P Tate.

NICAUD (P.). Les mycoses pulmonaires. [**Pulmonary Mycoses.**]—*Presse Méd.* 1926. Dec. 4. Vol. 34. No. 97. pp. 1521–1524. With 7 text figs. [14 refs.]

Pneumomycoses, though common, are frequently thought to be secondary infections, but MACAIGNE and Nicaud have observed a case of primary infection due to an Aspergillus. Clinically, pneumomycoses do not exhibit any distinctive symptoms, but may simulate chronic bronchitis, pulmonary tuberculosis, or broncho-pneumonial sclerosis. Sometimes they may be suspected through such features as long conservation of the general health, or frequent haemoptysis. The lesions themselves are variable, and there may be nodular lesions difficult to distinguish from those of syphilitic or tuberculous origin.

The principal pneumomycoses are :—*Mucormycoses*, rare and generally secondary infections. *Aspergilloses*, the chief species being *A. fumigatus*, a common saprophyte which is pathogenic for the pigeon, rabbit and guineapig. Very frequently aspergillosis is a secondary infection, most commonly associated with tuberculosis, but it may be a primary and fatal infection. *Oosporoses*, the commonest type being actinomycosis, may be primary with fatal termination, or may be secondary infections of tuberculous or other lesions. *Sporotrichosis* of the lung is rare and is caused only by the species *S. beurmanni*. Serodiagnosis and fixation of the complement are possible, but are not specific, as the reactions are also given in cases of actinomycosis and "thrush." Generally, pulmonary sporotrichosis is secondary to a cutaneous infection.

P. T.

Chyurlia (N). **Notes on a Case of Bronchomycosis.**—*Jl. Trop. Med. & Hyg.* 1926. May 15. Vol. 29. No. 10. pp. 145–146.

The patient, a woman aged 42 years, had suffered almost continuously since childhood from bronchial catarrh. The condition increased in severity and was diagnosed as chronic bronchitis. The Koch bacillus was not present, but yeast-cells were constantly found in the sputum and, later, fine hyphae. Cultures of the organism were obtained on Sabouraud's agar and it was identified as *Monilia krusei* (Cast. 1909). Injections of iodides, inhalations of balsamics, alkalines by mouth, application of ultra-violet rays, and the use of special autovaccine according to Steinfeld, have considerably improved the condition.

P. T.

Kotkis (A. J.), Wachowiak (M.) & Fleisher (Moyer S.). **The Relation of Monilia to Infections of the Upper Air Passages.**—*Arch. Intern. Med.* 1926. Aug. 15. Vol. 38. No. 2. pp. 217–221. [8 refs.]

Fungi were isolated from three cases of thrush (2 of babies and 1 of an adult) and from five cases of patients suffering from bronchitis associated with asthma of rather long duration. The organisms, which are provisionally classed as Monilia, appear to be similar from all cases, although they vary slightly in the reactions on carbohydrate media. Two of the bronchial cases were treated with vaccines prepared from the organism isolated and showed some improvement.

The pathogenicity to rabbits varies with different strains of Monilia, and generally large doses are necessary to kill the animal ; but when injected intratracheally death practically always ensues.

The authors incline to the opinion that the Monilias in such cases as these are secondary infections, although they may be responsible for maintaining the chronic symptoms.

P. T.

Castellani (Aldo). **Tonsillomycoses.** *New Orleans Med. & Surg. Jl.* 1926. Apr. Vol. 78. No. 10. pp. 651–661. With 5 text figs. [2 refs.]

Chronic tonsillomycosis is generally due to Microsiphonales. Cases due to the genera *Nocardia* and *Cohnistreptothrix* are rare, and usually

only one tonsil is affected. The affected tonsil is much enlarged and contains one or several small abscesses, the pus of which contains yellow or white granules due to the fungus. Leptothrix and Vibriothrix-like organisms occur in masses in the granules, which appear as whitish spots on the tonsils in cases of the little known condition of granular mycoses of the crypts. The affection is chronic, is not painful, and is generally accompanied by an offensive odour from the breath.

Acute and subacute tonsillomycoses are comparatively common, and are associated with fungi of the genera *Monilia*, *Saccharomyces*, *Cryptococcus*, *Oidium*, *Willia* and *Hemispora*. Clinically the conditions are similar whichever organism is concerned, except in the case of Hemispora, where the symptoms do not disappear so rapidly and the patches are greyish and not creamy. The prognosis is usually favourable but, clinically, acute tonsillomycoses may simulate diphtheria, Plaut-Vincent's angina and follicular tonsillitis. Illustrative cases are described.

P. T.

Montpellier (J.) & Catanei (A.). Présence du même *Monilia* chez deux malades porteurs de lésions différentes de la cavité buccale. [**The Same Monilia present in Different Mouth Lesions.**]—*C. R. Soc. Biol.* 1926. July 23. Vol. 95. No. 26. pp. 568–569.

A Monilia, differing in its morphology and biochemical reactions from *M. albicans*, was isolated in Algeria from a typical case of "thrush," and also from a case of a form of superficial glossitis common in Algeria in patients suffering from superficial suppurations of the head. In the latter case it was associated with streptococci.

P. T.

Filho (Pereira). **Macroglossia Mycotica.**—*Jl. Trop. Med. & Hyg.* 1927. Jan. 1. Vol. 30. No. 1. pp. 8–10. With 2 text figs.

This case of Macroglossia mycotica was observed at Porto Alegre, Brazil, the patient being an Italian aged 53. It began as a slight hypertrophy of the tongue about 12 years ago, and soon a thick white coating covered the whole tongue. The general health was good. Microscopical examination of scrapings showed long, septate hyphae and gram positive bacilli and cocci, but no yeast cells. On Sabouraud's glucose agar bright white colonies appeared in 48 hours at 37°. These were composed of round or oval cells arranged in pairs, or rarely isolated or in chains. In the water of condensation some mycelium was formed. Asci were not produced. The organism is regarded as a Monilia. The biochemical reactions place it in the Pinoy group of Castellani, but it differs from *Monilia pinoyi* and *M. nabarroi* in producing acidity but not gas in saccharose and galactose, and is therefore considered to be a new species and called *M. aldoi*.

Intraperitoneal inoculation of a rabbit with an emulsion of a pure culture on Sabouraud's medium causes death in 3 days; and intravenous inoculation of a guineapig with similar material caused death in 2 days.

P. T.

Stutzer (M. I.) & Abramowitsch (F. E.). Zur Frage ueber die Biologie der Aktinomyzeten. **On the Biology of Actinomyces.** —*Rev. Microbiol. et Epidémiol.* 1926. Vol. 5. No. 3. German summary pp. 237–238. [In Russian pp. 175–189. 13 refs.]

The cultures, of which 64 were studied, were isolated from the air, soil, straw, excrement, intestinal contents, and from actinomycotic lesions of man and animals.

Morphologically they fall into 3 groups typified by *Actinomyces bovis* Harz 1877, *Brevistreptothrix Actinomyces Israeli* Krusé 1896 and *Actinobacillus lignieresi* representing respectively the subsections Majores and Breviores of Chalmers and Christopherson 1916, and *Actinobacillus* Brumpt 1910.

Very good growth was obtained on a medium composed of bran 25 gm., straw 25 gm., peptone 10 gm., glycerine 20 gm., potassium phosphate 1.5 gm., sodium chloride 5 gm., water 1,000 cc., agar 2 per cent.

The results show that the depth of pigmentation may vary greatly in different colonies of the same culture. Actinomyces are comparatively inactive towards carbohydrates, but glucose, arabinose and dextrose are the most readily attacked and, in fluid media, dextrin and lactose greatly increase growth. A few days' growth may change the reaction of the medium to the alkaline side. They also grow on cellulose. Milk is coagulated by 87 per cent. of the cultures; but lipase is not present. *Actinomyces* Harz and *Brevistreptothrix Israeli* peptonize egg-albumen, but Actinobacillus does not. The two latter genera do not cause haemolysis. Catalase is present as an endoenzyme.

Investigation of the growth of mixed cultures of Actinomyces and various bacteria indicates that the poor growth of Actinomyces in the gut of man and animals is due to the inhibiting effect of the intestinal bacteria.

Actinobacillus lignieresi does not occur naturally as a saprophyte, Brevistreptothrix occurs seldom, and *Actinomyces* Harz commonly

P. T.

Woo (K. M.) & Young (M. P.). **Two Cases of Actinomycosis of Lung.** —*China Med. Jl.* 1926. May. Vol. 40. No. 5. pp. 461–3.

The first case was that of a male aged 56, who had slept in straw some months previously. Symptoms:—cough; pain in chest; weakness; anaemia; temperature 99–103; sputum foetid and tinged with blood; left base flat. Microscopical examination of sputum showed mass of filaments of actinomyces. Cultures were not made. 600 cc. of pus were removed by thoracotomy and tubes were inserted and normal saline irrigations given 3 times daily for 10 days, when a bronchial fistula developed. Two drachms of potassium iodide were given daily. After 6 weeks, the lesion had healed and the patient has remained well for 4 years.

The second case was a female aged 50, who had worked in raw straw some months before. Symptoms: pain in left chest, temperature 99–101; W.B.C. 17000; cough; sputum rusty coloured; dullness over left base. Actinomyces was present in the sputum, and the club-shaped form was grown in anaerobic blood-agar cultures; but only the filamentous form developed in bouillon. 900 cc. of fluid were aspirated

from the chest, and 3 drachms of potassium iodide were given daily for 2 weeks, after which half the amount was given daily for 6 weeks. The lung is now clear and the patient has had no trouble since.

P. T.

Proescher (F.), Ryan (F.) & Krueger (A. P.). **Report of a Case of Coccidioidal Granuloma with Autopsy Findings.** – *Jl. Lab. & Clin. Med.* 1926. Oct. Vol. 12. No. 1. pp. 57–70. With 8 text figs. [8 refs.]

This case of Coccidioidal granuloma was observed in San José, California. The patient was a male aged 61, and the termination was fatal after a duration of about 6 months. Early symptoms were slight fever, general malaise and debility, followed by pain in the left hip, right ankle and thumb. A subperiosteal abscess developed in the right side of the nose, and was followed by multiple abscesses of a similar nature, of the head, thumb and right malleolus. These abscesses did not respond to surgical or other treatment. At autopsy (a detailed description of which is given) lesions containing cysts were found in the lungs, spleen, liver, skull cap, metatarsal bones of the right foot, psoas muscle, and left clavicle.

From the pus of all the lesion, pure cultures of a fungus, *Coccidioides imitis* [*Mycoderma imite*] could be obtained. Cultures of the same fungus were obtained from blood taken 4 days before death. It grows best on sucrose agar at 37° C. Acidity, but no gas, is produced in lactose, maltose, sucrose, arabinose, l-xylose, d-galactose and glucose. Gelatine is slowly liquefied.

Experimental inoculation showed guineapigs to be more susceptible than white mice; and white rats to be refractory. The original pus was more virulent to guineapigs than pure cultures of the fungus, all animals inoculated with pus dying, while only 70 per cent. of those inoculated with cultures died. Successive inoculation from guineapig to guineapig increased the virulence of the fungus. Intraperitoneal inoculation of guineapigs caused death in about 4 weeks, and subcutaneous inoculation in from 2 to 3 months. Cysts were present in the lesions of various organs of inoculated animals, and from the pus of all the lesions recultivation of the fungus was possible.

P. T.

Slot (J. A.). Bijdrage tot de kennis der Blastomycose van de inwendige organen. **Contribution to the Knowledge of Blastomycosis of the Internal Organs.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 6. pp. 750–759. With 1 chart & 2 plates.

A young Chinese miner died from a subacute meningitis, which, apart from lucid intervals such as are often observed in tuberculous meningitis, did not present unusual features. In the cerebrospinal fluid yeast-like organisms were found. Post mortem examination showed the presence of the same organism in a lymph gland of the upper mediastinum. Four similar cases, collected from the literature, are briefly quoted. Probably the infection enters the body by the respiratory tract and spreads along the lymph ways.

W. J. Bias.

Rhamy (B. W.). **Blastomycosis of the Bladder.**— *Jl. Amer. Med. Assoc.* 1926. Aug. 7. Vol. 87. No. 6. pp. 405–406. With 3 text figs.

The patient, aged 47, suffered from frequent urination with burning and tenesmus. The urine contained one per cent. by volume of pus, but no bacteria were present. Numerous yeast cells were seen in smears, and pure cultures of a yeast were obtained. In its morphology and sugar reactions it resembled baker's yeast. Filaments were formed in bouillon cultures. Guineapig inoculation was negative. Treatment, first with iodine and salicylates internally, and later with hexylresorcinal and methenamine alternately, caused rapid improvement.

P. T.

REVIEWS AND NOTICES.

HARVARD INSTITUTE FOR TROPICAL BIOLOGY AND MEDICINE. **Medical Report of the Hamilton Rice Seventh Expedition to the Amazon, in Conjunction with the Department of Tropical Medicine of Harvard University, 1924-1925.** [STRONG (Richard P.), SHATTUCK (George C.), BEQUAERT (Joseph C.), WHEELER (Ralph E.), Members of the Medical Expedition.]—pp.xvi+313. With 70 plates & 16 text figs. Contributions from the Harvard Inst. for Trop. Biol. & Med. No. IV. 1926. Cambridge: Harvard University Press.

The procedure we would recommend in reading this report would be, after glancing through the introduction, to take chapter I dealing with the "Amazon Forest" and then chapter XVI containing "Observations on the Branco, Uraicuera and the Parima rivers." These are full of interesting matter. As when we survey the sky we are not exactly happy unless we can name the various constellations, so here, though we have the names Branco, Urarricuera, etc., we were not quite satisfied because we could not find them on the map (Plate I) which shows little but a red line of the route followed by the expedition. When these two chapters have whetted the appetite, then the reader will perhaps more readily give himself to the miscellaneous collection of assorted fruits set before him. He may have a suspicion that some of it is "canned" and has a flavour with which he is already familiar, yet the rest is "rare and refreshing fruit" of the Amazon.

The report is concerned with the investigations along a strip of territory in the Amazon valley bounded by Manaos on the south and Caracaray on the north, and extending from Para at the mouth of the Amazon to Parahiba 64° W. longitude.

To an extremist who holds the view that intramuscular injections of quinine constitute "malpractice" a visit to the west coast of Africa and personal experience of "bilious remittent" would no doubt bring rapid conversion. To an enthusiast who holds the view that the tropics are a "health resort" a visit to the Amazon forest would soon bring disillusion. "The virgin forest of the Amazon offers little hospitality to the traveller, and it has perhaps been appropriately named by Alberto Rangel the 'Inferno verde' where one soon dies of hunger and during the dry season suffers from thirst, when almost all the streams which traverse it are reduced to some few puddles of stagnant or brackish water. No other tropical climate is more debilitating and trying than that of parts of Amazonia. Portions of Amazonia to-day constitute some of the most unhealthy and most dangerous regions to reside in from the standpoint of health which exist in the tropics."

Chapter II. "The Amazon Forest," illustrated with good photographs, describes "the vague sensation of sadness, oppression and uneasiness which affects the traveller in the silence and gloom of these vast forests where the novice, embarrassed by the lianas, wounded by the numerous spinous plants and trees, severely bitten by stinging ants and mosquitoes, may in a comparatively short time become so physically exhausted as to render his return perilous."

Climatically in the regions of the great rivers and lakes the nights are exhausting from the heat and frequently peaceful and undisturbed slumber is not possible until two or three o'clock in the morning. At Manaos the maximum humidity—81·8°—occurs at 7 a.m., while the average minimum humidity—72·7°—occurs at 4 p.m. The average temperature is 28·2° C. (82·7° F.)

Emerging then more dead than alive from the terrors of the Forest and refusing to be led aside by the seductions of chapters III to XV, we breathe again in chapter XVI on the savannas above Caracary, and catch a glimpse

of the mountains on the borders of British Guiana and cheered by the sight of duck, waders and geese, we find ourselves among a people that are hospitable and friendly to travellers.

Although Boa Vista, 500 miles by river from Manaos and a town of some 1,600 inhabitants, has the next and most healthful climate of any place on the Rio Branco, yet we find among the Brazilian population of the savannas that mysterious entity *Tropical Splenomegaly* (Chapter VIII). It is the most prevalent pathological condition in the upper Amazon and Rio Branco. More than half the children in a village may show it. The various splenomegalies of which the cause is known are then discussed, e.g., those of malaria, kala azar, schistosomiasis (Egyptian splenomegaly) and rarer forms such as those due to tubercle and syphilis. The splenic anaemias, such as Banti's disease, Gaucher's disease, haemolytic jaundice are also considered, but the authors are so far unable to elucidate the cause of Brazilian splenomegaly with irregular fever. We think the coloured plate of a spleen smear from a case of splenomegaly is one of the least successful in the volume, for we can only guess what the majority of the cells represented are.

To consider now some of the remaining chapters seriatim we return to *Spirochaetal infections* (Chapter III). Syphilis is very prevalent in Manaos —population 50,000—and in the vicinity, nearly one-third of the population being affected. Yaws is much less common, but foci exist in Manaos. In Ceará, in certain hilly districts, 60 per cent. of the population suffer from the disease.

It is interesting to note the disappearance of Yellow fever in parts of Amazonia where *Stegomyia fasciata* is still found in great abundance ; these "gettings well of themselves" are only too often overlooked both in therapeutics and preventive medicine. Haemorrhagic jaundice and relapsing fever are rare. *Spirochaeta schaudinni* and *Spironema noguchii* are relegated to the next chapter.

Chronic inflammatory and ulcerative processes of the skin (Chapter IV.). It is, however, ulcers that dominate the pathology of the Amazon valley. *Ulcus tropicum* is by far the most common of these. It is an ulcer which spreads rapidly at first, but later becomes almost stationary, though not healing without treatment. It is generally single and on one leg. It reaches a diameter of 4 inches and extends into the subcutaneous tissue. Vincent in 1896 found spirochaetes and fusiform bacilli in 40 of 47 cases, in enormous numbers especially in the superficial portions of the tissue. These organisms occur also in Vincent's angina, cancrum oris, noma vulvae and in putrid conditions of the ear, bronchi and lungs. An ordinary ulcer contaminated experimentally with discharge from a tropical ulcer and then dressed aseptically, developed a month later phagedaenic characters. Treatment is fairly satisfactory, but the number of treatments in use gives rise to doubt.

Dermal granulomatous spirochaetosis is a new form of spirochaetal lesion discovered by the members of the expedition. It takes the form of soft papillomatous masses with a tendency to bleed and ulcerate. Scrapings show agglomerated masses of a new spirochaete, *Spironema noguchii*. Strong, Shattuck and Wheeler, 1926. It is 14–30 μ long. The spinonemas occur mainly in the epidermis, but also in the dermis, where they produce perivascular infiltration and narrowing of the lumen of the vessels. Fusiform bacilli are absent. Many other kinds of warty dermatitis, including the "mossy foot" condition of Thomas, await elucidation ; in some of these fungi have been found, in others not.

Granuloma inguinale.—The authors do not make it clear whether they saw many cases of the condition, but they were unable to cultivate the *Calymmatobacterium granulomatis* of Aragao. In specimens from India which we have happened to examine lately, these organisms were easily found, but there were also present large encapsuled structures containing a mass of material of uncertain nature (? bacilliform).

Leishmaniasis (Chapter V). "Espundia" of Brazil, "Uta" of Peru, is not common in Amazonia, and apparently the authors did not see any cases, though they describe *L. tropica* in a papillomatous lesion of 7 months' duration on a woman's thigh.

Leprosy (Chapter VI). In Para there are 2,400 lepers, or one to every 100 of the population. In Manaos there are about 400, and in Brazil some 24,000 lepers. Neglect of isolation seems to be almost general, and the picture of unhygienic lack of control is a melancholy one. Of the treatment by the esters of chaulmoogra it is said "that while sometimes beneficial, and very efficacious, and by far the most favourable means yet discovered, is not by any means ideal, and there is still a very great need for a more efficient preparation for the treatment of the disease."

Malaria (Chapter VIII). Although the authors state that malaria is the most prevalent and most serious disease of Amazonia, and that the lower Rio Branco is probably one of the worst malarial regions in the world, yet only 4½ pages are devoted to it. Their own observations are exceedingly meagre, and the treatment is indeed disappointing.

Trypanosomiasis (Chapter IX). Mal de Caderas, *Trypanosoma equinum* and the capibara are well described; likewise Chagas disease, *Schizotrypanum cruzi*, and the armadillo, but it does not appear that the authors made any personal observations in the matter, as they did not see a case of Chagas disease. They describe, however, *T. legeri* from the tamandua (*Tamandua tetradactyla*).

"Blastomycosis," "Other parasitic infections" and "Pathological conditions produced by Anthropoda" form the subjects of the remaining three chapters of part I. Medical and Economic Entomology forming part II and part III is mainly concerned with the Branco, Uraricuera and Parima rivers.

While we have hinted that the terse but useful epitomes of the work of previous observers rather outweigh the purely original matter, yet the authors are to be warmly congratulated on a very able and interesting report illustrated by numerous good photographs.

J. W. W. Stephens.

MARCHOUX (E.) [Professeur à l'Institut Pasteur.] V.–Paludisme. [**Malaria.**]—*Gilbert & Carnot. Nouveau Traité de Médecine et de Thérapeutique.* 366 pp. With 138 text figs. 1926. Paris: Librairie J. B. Baillière et Fils. 19 rue Hautefeuille. [Price 60 fr.]

This work, which extends to 360 pages and includes 135 illustrations, is a valuable summary of malaria in all its aspects. Professor Marchoux's experience of the study of the disease in the field dates from 1897* and, excepting British India, is almost world-wide. His appointment as French "expert member" of the Malaria Commission of the League of Nations has enabled him to add European to previous tropical experience. One result is that his book appeals equally to those who are attempting to deal with malaria in its endemic centres in Europe and to the hygienist in the Tropics. The chapters on prevention are particularly worthy of attention. They include a reasoned statement of the factors which seem to have been concerned in the partial disappearance of malaria from France, and a critical examination of a number of "anti-malarial campaigns," including those of Sierra Leone, Ismailia, Mian-Mir, Panama, Algeria and Italy. From this analysis it appears that Professor Marchoux is not very hopeful that in malarious localities a great deal can be effected by direct measures based on modern knowledge of the cycle of malaria in men and mosquitoes.

* E. Marchoux. Le Paludisme au Sénégal. *Ann. Inst. Pasteur.* 1897. Vol. II. pp. 640–62. With 1 plate.

He is disposed rather to advocate indirect methods, and particularly methods which aim at improving the conditions of life, the housing, and the general *bien-être* of the inhabitants. He develops this argument in some detail, taking as an example the problem of malaria in Corsica, which he recently studied in collaboration with Dr. L. Raynaud on behalf of the Malaria Commission of the League of Nations.*

The book is well arranged in four chief sections, and the directions for practical work in the laboratory and in the field show a first-hand knowledge of the subject in many countries. The history of the discoveries which have been made in connexion with the parasite and its evolution in the mosquito is fully given, and here, as in other sections of the book, the author shows a wide acquaintance with the literature in all languages. This feature makes the book useful as a handy volume of reference even for research workers, but its particular appeal is evidently to students and to medical men and malariologists in general.

S. P. James.

Loiselet (J.). [M.I.C., Ancien Professeur à la Faculté française de Beyrouth, Professeur de Parasitologie à la Faculté libre de Lille.] Vade-mecum de Parasitologie. [**Vade-Mecum of Parasitology.**] —153 pp. 1927. Paris : Librairie E. le François, 91, Boulevard Saint-Germain.

This little volume, weighing a bare seven ounces, represents parasitology in quintessential condensation. Here—if the metaphor may be changed—we find, clothed in uniform brevity and precision of language, the memorable facts regarding parasites, and the lesions and diseases with which they severally are conjoined, orderly ranked in five battalions under the natural headings of Spirochaetes, Protozoa, Helminths, Arthropoda, and Mycoses. The proportions of these groups vary—Spirochaetes 10 pp., Protozoa 18 pp., Helminths 40 pp., Arthropoda 19 pp., Mycoses and mycological glossary 47 pp. The object of the book, as stated in the preface, is to refresh the memory of the practitioner, so that in the account of each disease the treatment is included. Taxonomy is observed but not obtruded. There are some who like a Vade-mecum, and to them this one is heartily commended.

A. Alcock.

Pawlowsky (E. N.). [Professor der Zoologie und vergleichenden Anatomie an der Militar-Medizinischen Akademie in Leningrad.] Gifttiere und ihre Giftigkeit. [**Poison Animals and their Poisons.**] —pp. xvi+516. With 176 text figs. 1927. Jena : Verlag von Gustav Fischer. [27 Mk.]

This is a useful compilation, though encumbered by a capricious arrangement of its contents, the author having endeavoured to improve upon the natural classification of animals by an art that is as much estranged from nature as it is wrenched from convenience. To take as a fair illustration, his method of treating the venomous and poisonous fishes : information on this interesting subject is not imparted as a continuous story under the natural heading " Fishes," but is sent astray through the book and has to be sought in five separate places, under as many subordinate sections of an insignificant scheme where venomous animals are regimented and brigaded according to the nature of the weapon or the apparatus by which they discharge or impart their venom. Fishes that are armed with a poison spine are to be found in one place in the same series as scorpions, Hymenoptera, and urticating caterpillars ; fishes inflicting a venomous bite are

* Drs. E. Marchoux et L. Raynaud. Le Paludisme en Corse. League of Nations publication C.H. 338. Geneva 1926.

found in another place in a series with centipedes, spiders, ticks, bugs, and reptiles; and the strange fishes that have poisonous flesh, the familiar fishes whose flesh is poisonous in certain circumstances, and the fishes having toxic blood have all to be looked for in different parts of the book—and this method of putting asunder the things that nature has joined is applied to all the other Classes of the animal kingdom. Apart from this unprofitable systematization the book may be commended as containing a large assortment of useful and well-documented information in a reasonable compass.

A. Alcock.